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Master Budget and Responsibility Accounting

► Learning Objectives

1. Describe the master budget and explain its benefits
2. Describe the advantages of budgets
3. Prepare the operating budget and its supporting schedules
4. Use computer-based financial planning models for sensitivity analysis
5. Describe responsibility centers and responsibility accounting
6. Recognize the human aspects of budgeting
7. Appreciate the special challenges of budgeting in multinational companies

Amid the recent recession, one of the hottest innovations was the growth of Web sites that enable users to get an aggregate picture of their financial data and to set up budgets to manage their spending and other financial decisions online. (Mint.com, a pioneer in this market, was acquired by Intuit for \$170 million in September 2009.)

Budgets play a similar crucial role in businesses. Without budgets, it's difficult for managers and their employees to know whether they're on target for their growth and spending goals. You might think a budget is only for companies that are in financial difficulty (such as Citigroup) or whose profit margins are slim—Wal-Mart, for example. As the following article shows, even companies that sell high-dollar value goods and services adhere to budgets.

“Scrimping” at the Ritz: Master Budgets

“Ladies and gentlemen serving ladies and gentlemen.” That’s the motto of the Ritz-Carlton. With locations ranging from South Beach (Miami) to South Korea, the grand hotel chain is known for its indulgent luxury and sumptuous surroundings. However, the aura of the chain’s old-world elegance stands in contrast to its rather heavy emphasis—behind the scenes, of course—on cost control and budgets. It is this very approach, however, that makes it possible for the Ritz to offer the legendary grandeur its guests expect during their stay.

A Ritz hotel’s performance is the responsibility of its general manager and controller at each location worldwide. Local forecasts and budgets are prepared annually and are the basis of subsequent performance evaluations for the hotel and people who work there.

The preparation of a hotel’s budget begins with the hotel’s sales director, who is responsible for all hotel revenues. Sources of revenue include hotel rooms, conventions, weddings, meeting facilities, merchandise, and food and beverage. The controller then seeks input about costs. Standard costs, based on cost per occupied room, are used to build the budget for guest room stays. Other standard costs are used to calculate costs for meeting rooms and food and beverages. The completed sales budget and annual operating budget are sent to corporate headquarters. From there, the hotel’s actual monthly performance is monitored against the approved budget.

The managers of each hotel meet daily to review the hotel's performance to date relative to plan. They have the ability to adjust prices in the reservation system if they so choose. Adjusting prices can be particularly important if a hotel experiences unanticipated changes in occupancy rates.

Each month, the hotel's actual performance is monitored against the approved budget. The controller of each hotel receives a report from corporate headquarters that shows how the hotel performed against budget, as well as against the actual performance of other Ritz hotels. Any ideas for boosting revenues and reducing costs are regularly shared among hotel controllers.

Why does a successful company feel the need to watch its spending so closely? In many profitable companies, a strict budget is actually a key to their success. As the Ritz-Carlton example illustrates, budgeting is a critical function in organizations. Southwest Airlines, for example, uses budgets to monitor and manage fuel costs. Wal-Mart depends on its budget to maintain razor-thin margins as it competes with Target. Gillette uses budgets to plan marketing campaigns for its razors and blades.

Budgeting is a common accounting tool that companies use for implementing strategy. Management uses budgets to communicate directions and goals throughout a company. Budgets turn managers' perspectives forward and aid in planning and controlling the actions managers must undertake to satisfy their customers and succeed in the marketplace. Budgets provide measures of the financial results a company expects from its planned activities and help define objectives and timelines against which progress can be measured. Through budgeting, managers learn to anticipate and avoid potential problems. Interestingly, even when it comes to entrepreneurial activities, business planning has been shown to increase a new venture's probability of survival, as well as its product development and venture organizing activities.¹ As the old adage goes: "If you fail to plan, you plan to fail."



¹ For more details, take a look at F. Delmar and S. Shane, "Does Business Planning Facilitate the Development of New Ventures?" *Strategic Management Journal*, December 2003.

Learning Objective 1

Describe the master budget

... The master budget is the initial budget prepared before the start of a period

and explain its benefits

... benefits include planning, coordination, and control

Budgets and the Budgeting Cycle

A *budget* is (a) the quantitative expression of a proposed plan of action by management for a specified period and (b) an aid to coordinate what needs to be done to implement that plan. A budget generally includes both financial and nonfinancial aspects of the plan, and it serves as a blueprint for the company to follow in an upcoming period. A financial budget quantifies management's expectations regarding income, cash flows, and financial position. Just as financial statements are prepared for past periods, financial statements can be prepared for future periods—for example, a budgeted income statement, a budgeted statement of cash flows, and a budgeted balance sheet. Underlying these financial budgets are nonfinancial budgets for, say, units manufactured or sold, number of employees, and number of new products being introduced to the marketplace.

Strategic Plans and Operating Plans

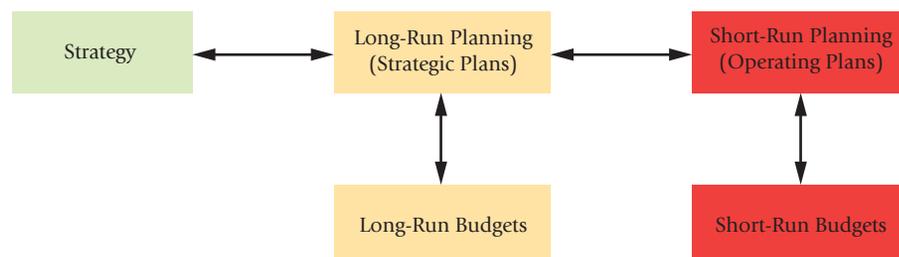
Budgeting is most useful when it is integrated with a company's strategy. *Strategy* specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives. In developing successful strategies, managers consider questions such as the following:

- What are our objectives?
- How do we create value for our customers while distinguishing ourselves from our competitors?
- Are the markets for our products local, regional, national, or global? What trends affect our markets? How are we affected by the economy, our industry, and our competitors?
- What organizational and financial structures serve us best?
- What are the risks and opportunities of alternative strategies, and what are our contingency plans if our preferred plan fails?

A company, such as Home Depot, can have a strategy of providing quality products or services at a low price. Another company, such as Pfizer or Porsche, can have a strategy of providing a unique product or service that is priced higher than the products or services of competitors. Exhibit 6-1 shows that strategic plans are expressed through long-run budgets and operating plans are expressed via short-run budgets. But there is more to the story! The exhibit shows arrows pointing backward as well as forward. The backward arrows are a way of graphically indicating that budgets can lead to changes in plans and strategies. Budgets help managers assess strategic risks and opportunities by providing them with feedback about the likely effects of their strategies and plans. Sometimes the feedback signals to managers that they need to revise their plans and possibly their strategies.

Boeing's experience with the 747-8 program illustrates how budgets can help managers rework their operating plans. Boeing viewed updating its 747 jumbo jet by sharing design synergies with the ongoing 787 Dreamliner program as a relatively inexpensive way to take sales from Airbus' A380 superjumbo jet. However, continued cost overruns and delays have undermined that strategy: The 747-8 program is already \$2 billion over budget and a year behind schedule. The company recently revealed that it expects to earn no profit on virtually any of the 105 747-8 planes on its order books. With the budget for 2010 revealing higher-than-expected costs in design, rework, and production, Boeing has postponed plans to accelerate the jumbo's production to 2013. Some aerospace experts are urging Boeing to consider more dramatic steps, including discontinuing the passenger aircraft version of the 747-8 program.

Exhibit 6-1
Strategy, Planning, and Budgets



Budgeting Cycle and Master Budget

Well-managed companies usually cycle through the following budgeting steps during the course of the fiscal year:

1. Working together, managers and management accountants plan the performance of the company as a whole and the performance of its subunits (such as departments or divisions). Taking into account past performance and anticipated changes in the future, managers at all levels reach a common understanding on what is expected.
2. Senior managers give subordinate managers a frame of reference, a set of specific financial or nonfinancial expectations against which actual results will be compared.
3. Management accountants help managers investigate variations from plans, such as an unexpected decline in sales. If necessary, corrective action follows, such as a reduction in price to boost sales or cutting of costs to maintain profitability.
4. Managers and management accountants take into account market feedback, changed conditions, and their own experiences as they begin to make plans for the next period. For example, a decline in sales may cause managers to make changes in product features for the next period.

The preceding four steps describe the ongoing budget process. The working document at the core of this process is called the *master budget*. The **master budget** expresses management's operating and financial plans for a specified period (usually a fiscal year), and it includes a set of budgeted financial statements. The master budget is the initial plan of what the company intends to accomplish in the budget period. The master budget evolves from both operating and financing decisions made by managers.

- Operating decisions deal with how to best use the limited resources of an organization.
- Financing decisions deal with how to obtain the funds to acquire those resources.

The terminology used to describe budgets varies among companies. For example, budgeted financial statements are sometimes called **pro forma statements**. Some companies, such as Hewlett-Packard, refer to budgeting as *targeting*. And many companies, such as Nissan Motor Company and Owens Corning, refer to the budget as a *profit plan*. Microsoft refers to goals as *commitments* and distributes firm-level goals across the company, connecting them to organizational, team, and ultimately individual commitments.

This book's focus centers on how management accounting helps managers make operating decisions, which is why this chapter emphasizes operating budgets. Managers spend a significant part of their time preparing and analyzing budgets. The many advantages of budgeting make spending time on the budgeting process a worthwhile investment of managers' energies.

Advantages of Budgets

Budgets are an integral part of management control systems. When administered thoughtfully by managers, budgets do the following:

- Promote coordination and communication among subunits within the company
- Provide a framework for judging performance and facilitating learning
- Motivate managers and other employees

Coordination and Communication

Coordination is meshing and balancing all aspects of production or service and all departments in a company in the best way for the company to meet its goals. *Communication* is making sure those goals are understood by all employees.

Coordination forces executives to think of relationships among individual departments within the company, as well as between the company and its supply chain partners. Consider budgeting at Pace, a United Kingdom-based manufacturer of electronic products. A key product is Pace's digital set-top box for decoding satellite broadcasts. The production manager can achieve more timely production by coordinating and

Decision Point

What is the master budget and why is it useful?

Learning Objective 2

Describe the advantages of budgets

... advantages include coordination, communication, performance evaluation, and managerial motivation

communicating with the company's marketing team to understand when set-top boxes will be needed. In turn, the marketing team can make better predictions of future demand for set-top boxes by coordinating and communicating with Pace's customers.

Suppose BSKyB, one of Pace's largest customers, is planning to launch a new high-definition personal video recorder service. If Pace's marketing group is able to obtain information about the launch date for the service, it can share this information with Pace's manufacturing group. The manufacturing group must then coordinate and communicate with Pace's materials-procurement group, and so on. The point to understand is that Pace is more likely to have satisfied customers (by having personal video recorders in the demanded quantities at the times demanded) if Pace coordinates and communicates both within its business functions and with its suppliers and customers during the budgeting process as well as during the production process.

Framework for Judging Performance and Facilitating Learning

Budgets enable a company's managers to measure actual performance against predicted performance. Budgets can overcome two limitations of using past performance as a basis for judging actual results. One limitation is that past results often incorporate past mis-cues and substandard performance. Consider a cellular telephone company (Mobile Communications) examining the current-year (2012) performance of its sales force. Suppose the performance for 2011 incorporated the efforts of many salespeople who have since left Mobile because they did not have a good understanding of the marketplace. (The president of Mobile said, "They could not sell ice cream in a heat wave.") Using the sales record of those departed employees would set the performance bar for 2012 much too low.

The other limitation of using past performance is that future conditions can be expected to differ from the past. Consider again Mobile Communications. Suppose, in 2012, Mobile had a 20% revenue increase, compared with a 10% revenue increase in 2011. Does this increase indicate outstanding sales performance? Before you say yes, consider the following facts. In November 2011, an industry trade association forecasts that the 2012 growth rate in industry revenues will be 40%, which also turned out to be the actual growth rate. As a result, Mobile's 20% actual revenue gain in 2012 takes on a negative connotation, even though it exceeded the 2011 actual growth rate of 10%. Using the 40% budgeted sales growth rate provides a better measure of the 2012 sales performance than using the 2011 actual growth rate of 10%.

It is important to remember that a company's budget should not be the only benchmark used to evaluate performance. Many companies also consider performance relative to peers as well as improvement over prior years. The problem with evaluating performance relative only to a budget is it creates an incentive for subordinates to set a target that is relatively easy to achieve.² Of course, managers at all levels recognize this incentive, and therefore work to make the budget more challenging to achieve for the individuals who report to them. Negotiations occur among managers at each of these levels to understand what is possible and what is not. The budget is the end product of these negotiations.

One of the most valuable benefits of budgeting is that it helps managers gather relevant information for improving future performance. When actual outcomes fall short of budgeted or planned results, it prompts thoughtful senior managers to ask questions about what happened and why, and how this knowledge can be used to ensure that such shortfalls do not occur again. This probing and learning is one of the most important reasons why budgeting helps improve performance.

Motivating Managers and Other Employees

Research shows that challenging budgets improve employee performance because employees view falling short of budgeted numbers as a failure. Most employees are motivated to work more intensely to avoid failure than to achieve success. As employees get

² For several examples, see J. Hope and R. Fraser, *Beyond Budgeting* (Boston, MA: Harvard Business School Press, 2003). The authors also criticize the tendency for managers to administer budgets rigidly even when changing market conditions have rendered the budget obsolete.

closer to a goal, they work harder to achieve it. Therefore, many executives like to set demanding but achievable goals for their subordinate managers and employees.³ Creating a little anxiety improves performance, but overly ambitious and unachievable budgets increase anxiety without motivation because employees see little chance of avoiding failure. General Electric's former CEO, Jack Welch, describes challenging, yet achievable, budgets as energizing, motivating, and satisfying for managers and other employees, and capable of unleashing out-of-the-box and creative thinking.

Challenges in Administering Budgets

The budgeting process involves all levels of management. Top managers want lower-level managers to participate in the budgeting process because lower-level managers have more specialized knowledge and first-hand experience with day-to-day aspects of running the business. Participation creates greater commitment and accountability toward the budget among lower-level managers. This is the bottom-up aspect of the budgeting process.

The budgeting process, however, is a time-consuming one. It has been estimated that senior managers spend about 10% to 20% of their time on budgeting, and finance planning departments spend as much as 50% of their time on it.⁴ For most organizations, the annual budget process is a months-long exercise that consumes a tremendous amount of resources. Despite his admiration for setting challenging targets, Jack Welch has also referred to the budgeting process as “the most ineffective process in management,” and as “the bane of corporate America.”

The widespread prevalence of budgets in companies ranging from major multinational corporations to small local businesses indicates that the advantages of budgeting systems outweigh the costs. To gain the benefits of budgeting, management at all levels of a company should understand and support the budget and all aspects of the management control system. This is critical for obtaining lower-level management's participation in the formulation of budgets and for successful administration of budgets. Lower-level managers who feel that top management does not “believe” in a budget are unlikely to be active participants in a budget process.

Budgets should not be administered rigidly. Attaining the budget is not an end in itself, especially when conditions change dramatically. A manager may commit to a budget, but if a situation arises in which some unplanned repairs or an unplanned advertising program would serve the long-run interests of the company, the manager should undertake the additional spending. On the flip side, the dramatic decline in consumer demand during the recent recession led designers such as Gucci to slash their ad budgets and put on hold planned new boutiques. Macy's and other retailers, stuck with shelves of merchandise ordered before the financial crisis, had no recourse but to slash prices and cut their workforce. JCPenney eventually missed its sales projections for 2008–09 by \$2 billion. However, its aggressive actions during the year enabled it to survive the recession and emerge with sophisticated new inventory management plans to profit from the next holiday season.

Developing an Operating Budget

Budgets are typically developed for a set period, such as a month, quarter, year, and so on. The set period can itself be broken into subperiods. For example, a 12-month cash budget may be broken into 12 monthly periods so that cash inflows and outflows can be better coordinated.

Time Coverage of Budgets

The motive for creating a budget should guide a manager in choosing the period for the budget. For example, consider budgeting for a new Harley-Davidson 500-cc motorcycle. If the purpose is to budget for the total profitability of this new model, a five-year period (or more) may be suitable and long enough to cover the product from design through to manufacture, sales, and after-sales support. In contrast, consider budgeting for a school

³ For a detailed discussion and several examples of the merits of setting specific hard goals, see G. Latham, “The Motivational Benefits of Goal-Setting,” *Academy of Management Executive* 18, no. 4, (2004).

⁴ See P. Horvath and R. Sauter, “Why Budgeting Fails: One Management System is Not Enough,” Balanced Scorecard Report, (September 2004).

Decision Point

When should a company prepare budgets? What are the advantages of preparing budgets?

Learning Objective 3

Prepare the operating budget

... the budgeted income statement

and its supporting schedules

... such as cost of goods sold and nonmanufacturing costs

play. If the purpose is to estimate all cash outlays, a six-month period from the planning stage to the final performance may suffice.

The most frequently used budget period is one year, which is often subdivided into months and quarters. The budgeted data for a year are frequently revised as the year goes on. At the end of the second quarter, management may change the budget for the next two quarters in light of new information obtained during the first six months. For example, Amerigroup, a health insurance firm, had to make substantial revisions to its third-quarter and annual cost projections for 2009 because of higher-than-expected costs related to the H1N1 virus.

Businesses are increasingly using rolling budgets. A **rolling budget**, also called a **continuous budget**, is a budget that is always available for a specified future period. It is created by continually adding a month, quarter, or year to the period that just ended. Consider Electrolux, the global appliance company, which has a three- to five-year strategic plan and a four-quarter rolling budget. A four-quarter rolling budget for the April 2011 to March 2012 period is superseded in the next quarter—that is in June 2011—by a four-quarter rolling budget for July 2011 to June 2012, and so on. There is always a 12-month budget (for the next year) in place. Rolling budgets constantly force Electrolux's management to think about the forthcoming 12 months, regardless of the quarter at hand. Some companies prepare rolling financial forecasts that look ahead five quarters. Examples are Borealis, Europe's leading polyolefin plastics manufacturer; Millipore, a life sciences research and manufacturing firm headquartered in Massachusetts; and Nordea, the largest financial services group in the Nordic and Baltic Sea region. Others, such as EMC Corporation, the information infrastructure giant, employ a six-quarter rolling-forecast process so that budget allocations can be constantly adjusted to meet changing market conditions.

Steps in Preparing an Operating Budget

The best way to explain how to prepare an operating budget is by walking through the steps a company would take to do so. Consider Stylistic Furniture, a company that makes two types of granite-top coffee tables: Casual and Deluxe. It is late 2011 and Stylistic's CEO, Rex Jordan, is very concerned about how he is going to respond to the board of directors' mandate to increase profits by 10% in the coming year. Jordan goes through the five-step decision-making process introduced in Chapter 1.

1. **Identify the problem and uncertainties.** The problem is to identify a strategy and to build a budget to achieve a 10% profit growth. There are several uncertainties. Can Stylistic dramatically increase sales for its more profitable Deluxe tables? What price pressures is Stylistic likely to face? Will the cost of materials increase? Can costs be reduced through efficiency improvements?
2. **Obtain information.** Stylistic's managers gather information about sales of Deluxe tables in the current year. They are delighted to learn that sales have been stronger than expected. Moreover, one of the key competitors in Stylistic's Casual tables line has had quality problems that are unlikely to be resolved until early 2012. Unfortunately, they also discover that the prices of direct materials have increased slightly during 2011.
3. **Make predictions about the future.** Stylistic's managers feel confident that with a little more marketing, they will be able to grow the Deluxe tables business and even increase prices slightly relative to 2011. They also do not expect significant price pressures on Casual tables in the early part of the year, because of the quality problems faced by a key competitor. They are concerned, however, that when the competitor does start selling again, pressure on prices could increase.

The purchasing manager anticipates that prices of direct materials will be about the same as in 2011. The manufacturing manager believes that efficiency improvements would allow costs of manufacturing tables to be maintained at 2011 costs despite an increase in the prices of other inputs. Achieving these efficiency improvements is important if Stylistic is to maintain its 12% operating margin (that is, $\text{operating income} \div \text{sales} = 12\%$) and to grow sales and operating income.

4. **Make decisions by choosing among alternatives.** Jordan and his managers feel confident in their strategy of pushing sales of Deluxe tables. This decision has some risks but is easily the best option available for Stylistic to increase profits by 10%.
5. **Implement the decision, evaluate performance, and learn.** As we will discuss in Chapters 7 and 8, managers compare actual to predicted performance to learn about why things turned out the way they did and how to do things better. Stylistic's managers would want to know whether their predictions about prices of Casual and Deluxe tables were correct. Did prices of direct materials increase more or less than anticipated? Did efficiency improvements occur? Such learning would be very helpful as Stylistic plans its budgets in subsequent years.

Stylistic's managers begin their work toward the 2012 budget. Exhibit 6-2 shows a diagram of the various parts of the *master budget*. The master budget comprises the financial projections of all the individual budgets for a company for a specified period, usually a fiscal year. The light, medium, and dark purple boxes in Exhibit 6-2 represent the budgeted income statement and its supporting budget schedules—together called the **operating budget**.

We show the revenues budget box in a light purple color to indicate that it is often the starting point of the operating budget. The supporting schedules—shown in medium purple—quantify the budgets for various business functions of the value chain, from research and development to distribution costs. These schedules build up to the budgeted income statement—the key summary statement in the operating budget—shown in dark purple.

The light and dark blue boxes in the exhibit are the **financial budget**, which is that part of the master budget made up of the capital expenditures budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows. A financial budget focuses on how operations and planned capital outlays affect cash—shown in light blue.

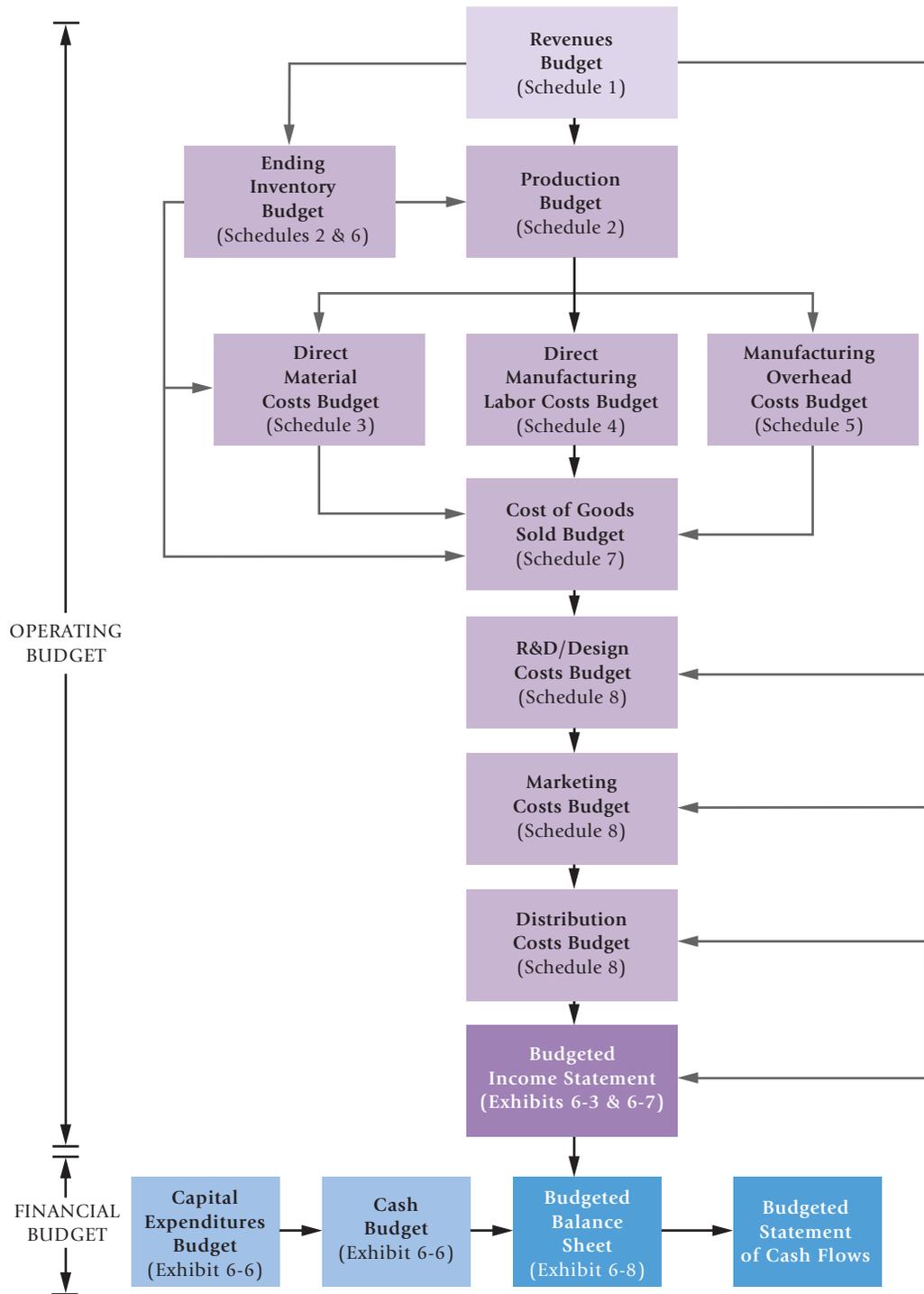
The cash budget and the budgeted income statement can then be used to prepare two other summary financial statements—the budgeted balance sheet and the budgeted statement of cash flows—shown in dark blue. The master budget is finalized only after several rounds of discussions between top management and managers responsible for various business functions in the value chain.

We next present the steps in preparing an operating budget for Stylistic Furniture for 2012. Use Exhibit 6-2 as a guide for the steps that follow. The appendix to this chapter presents Stylistic's cash budget, which is another key component of the master budget. Details needed to prepare the budget follow:

- Stylistic sells two models of granite-top coffee tables: Casual and Deluxe. Revenue unrelated to sales, such as interest income, is zero.
- Work-in-process inventory is negligible and is ignored.
- Direct materials inventory and finished goods inventory are costed using the first-in, first-out (FIFO) method. Unit costs of direct materials purchased and unit costs of finished goods sold remain unchanged throughout each budget year but can change from year to year.
- There are two types of direct materials: red oak (RO) and granite slabs (GS). Direct material costs are variable with respect to units of output—coffee tables.
- Direct manufacturing labor workers are hired on an hourly basis; no overtime is worked.
- There are two cost drivers for manufacturing overhead costs—direct manufacturing labor-hours and setup labor-hours.
- Direct manufacturing labor-hours is the cost driver for the variable portion of manufacturing operations overhead. The fixed component of manufacturing operations overhead is tied to the manufacturing capacity of 300,000 direct manufacturing labor-hours that Stylistic has planned for 2012.
- Setup labor-hours is the cost driver for the variable portion of machine setup overhead. The fixed component of machine setup overhead is tied to the setup capacity of 15,000 setup labor-hours that Stylistic has planned for 2012.
- For computing inventoriable costs, Stylistic allocates all (variable and fixed) manufacturing operations overhead costs using direct manufacturing labor-hours and machine setup overhead costs using setup labor-hours.

Exhibit 6-2

Overview of the Master Budget for Stylistic Furniture



- Nonmanufacturing costs consist of product design, marketing, and distribution costs. All product design costs are fixed costs for 2012. The variable component of marketing costs equals the 6.5% sales commission on revenues paid to salespeople. The variable portion of distribution costs varies with cubic feet of tables moved.

The following data are available for the 2012 budget:

Direct materials	
Red Oak	\$ 7 per board foot (b.f.) (same as in 2011)
Granite	\$10 per square foot (sq. ft.) (same as in 2011)
Direct manufacturing labor	\$20 per hour

Content of Each Product Unit

	Product	
	Casual Granite Table	Deluxe Granite Table
Red Oak	12 board feet	12 board feet
Granite	6 square feet	8 square feet
Direct manufacturing labor	4 hours	6 hours

	Product	
	Casual Granite Table	Deluxe Granite Table
Expected sales in units	50,000	10,000
Selling price	\$ 600	\$ 800
Target ending inventory in units	11,000	500
Beginning inventory in units	1,000	500
Beginning inventory in dollars	\$384,000	\$262,000

	Direct Materials	
	Red Oak	Granite
Beginning inventory	70,000 b.f.	60,000 sq. ft.
Target ending inventory	80,000 b.f.	20,000 sq. ft.

Stylistic bases its budgeted cost information on the costs it predicts it will incur to support its revenue budget, taking into account the efficiency improvements it expects to make in 2012. Recall from Step 3 in the decision-making process (p. 188) that efficiency improvements are critical to offset anticipated increases in the cost of inputs and to maintain Stylistic's 12% operating margin. Some companies rely heavily on past results when developing budgeted amounts; others rely on detailed engineering studies. Companies differ in how they compute their budgeted amounts.

Most companies have a budget manual that contains a company's particular instructions and relevant information for preparing its budgets. Although the details differ among companies, the following basic steps are common for developing the operating budget for a manufacturing company. Beginning with the revenues budget, each of the other budgets follows step-by-step in logical fashion.

Step 1: Prepare the Revenues Budget. A revenues budget, calculated in Schedule 1, is the usual starting point for the operating budget. That's because the production level and the inventory level—and therefore manufacturing costs—as well as nonmanufacturing costs, generally depend on the forecasted level of unit sales or revenues. Many factors influence the sales forecast, including the sales volume in recent periods, general economic and industry conditions, market research studies, pricing policies, advertising and sales promotions, competition, and regulatory policies. In Stylistic's case, the revenues budget for 2012 reflects Stylistic's strategy to grow revenues by increasing sales of Deluxe tables from 8,000 tables in 2011 to 10,000 tables in 2012.

	Units	Selling Price	Total Revenues
Casual	50,000	\$600	\$30,000,000
Deluxe	10,000	800	8,000,000
Total			<u>\$38,000,000</u>

The \$38,000,000 is the amount of revenues in the budgeted income statement. The revenues budget is often the result of elaborate information gathering and discussions among sales managers and sales representatives who have a detailed understanding of customer needs, market potential, and competitors' products. This information is often gathered through a customer response management (CRM) or sales management system. Statistical approaches such as regression and trend analysis can also help in sales forecasting. These techniques use indicators of economic activity and past sales data to forecast future sales. Managers should use statistical analysis only as one input to forecast sales. In the final analysis, the sales forecast should represent the collective experience and judgment of managers.

The usual starting point for Step 1 is to base revenues on expected demand. Occasionally, a factor other than demand limits budgeted revenues. For example, when

demand is greater than available production capacity or a manufacturing input is in short supply, the revenues budget would be based on the maximum units that could be produced. Why? Because sales would be limited by the amount produced.

Step 2: Prepare the Production Budget (in Units). After revenues are budgeted, the manufacturing manager prepares the production budget, which is calculated in Schedule 2. The total finished goods units to be produced depend on budgeted unit sales and expected changes in units of inventory levels:

$$\begin{array}{rcccl} \text{Budget} & & \text{Target ending} & & \text{Beginning} \\ \text{production} & = & \text{finished goods} & - & \text{finished goods} \\ \text{(units)} & & \text{inventory} & & \text{inventory} \\ & & \text{(units)} & & \text{(units)} \end{array}$$

Schedule 2: Production Budget (in Units)
For the Year Ending December 31, 2012

	Product	
	Casual	Deluxe
Budgeted unit sales (Schedule 1)	50,000	10,000
Add target ending finished goods inventory	11,000	500
Total required units	61,000	10,500
Deduct beginning finished goods inventory	1,000	500
Units of finished goods to be produced	60,000	10,000

Step 3: Prepare the Direct Material Usage Budget and Direct Material Purchases Budget.

The number of units to be produced, calculated in Schedule 2, is the key to computing the usage of direct materials in quantities and in dollars. The direct material quantities used depend on the efficiency with which materials are consumed to produce a table. In determining budgets, managers are constantly anticipating ways to make process improvements that increase quality and reduce waste, thereby reducing direct material usage and costs.

Like many companies, Stylistic has a *bill of materials*, stored and updated in its computer systems. This document identifies how each product is manufactured, specifying all materials (and components), the sequence in which the materials are used, the quantity of materials in each finished unit, and the work centers where the operations are performed. For example, the bill of materials would indicate that 12 board feet of red oak and 6 square feet of granite are needed to produce each Casual coffee table, and 12 board feet of red oak and 8 square feet of granite to produce each Deluxe coffee table. This information is then used to calculate the amounts in Schedule 3A.

Schedule 3A: Direct Material Usage Budget in Quantity and Dollars
For the Year Ending December 31, 2012

	Material		Total
	Red Oak	Granite	
Physical Units Budget			
Direct materials required for Casual tables (60,000 units × 12 b.f. and 6 sq. ft.)	720,000 b.f.	360,000 sq. ft.	
Direct materials required for Deluxe tables (10,000 units × 12 b.f. and 8 sq. ft.)	120,000 b.f.	80,000 sq. ft.	
Total quantity of direct materials to be used	840,000 b.f.	440,000 sq. ft.	
Cost Budget			
Available from beginning direct materials inventory (under a FIFO cost-flow assumption)			
Red Oak: 70,000 b.f. × \$7 per b.f.	\$ 490,000		
Granite: 60,000 sq. ft. × \$10 per sq. ft.		\$ 600,000	
To be purchased this period			
Red Oak: (840,000 – 70,000) b.f. × \$7 per b.f.	5,390,000		
Granite: (440,000 – 60,000) sq. ft. × \$10 per sq. ft.		3,800,000	
Direct materials to be used this period	\$5,880,000	\$4,400,000	\$10,280,000

The purchasing manager prepares the budget for direct material purchases, calculated in Schedule 3B, based on the budgeted direct materials to be used, the beginning inventory of direct materials, and the target ending inventory of direct materials:

$$\begin{array}{rclcl} \text{Purchases} & & \text{Direct} & \text{Target ending} & \text{Beginning} \\ \text{of direct} & = & \text{materials} & \text{inventory} & \text{inventory} \\ \text{materials} & & \text{used in} & \text{of direct} & \text{of direct} \\ & & \text{production} & \text{materials} & \text{materials} \end{array}$$

Schedule 3B: Direct Material Purchases Budget
For the Year Ending December 31, 2012

	Material		Total
	Red Oak	Granite	
Physical Units Budget			
To be used in production (from Schedule 3A)	840,000 b.f.	440,000 sq. ft.	
Add target ending inventory	80,000 b.f.	20,000 sq. ft.	
Total requirements	920,000 b.f.	460,000 sq. ft.	
Deduct beginning inventory	70,000 b.f.	60,000 sq. ft.	
Purchases to be made	850,000 b.f.	400,000 sq. ft.	
Cost Budget			
Red Oak: 850,000 b.f. × \$7 per b.f.	\$5,950,000		
Granite: 400,000 sq. ft. × \$10 per sq. ft.		\$4,000,000	
Purchases	\$5,950,000	\$4,000,000	\$9,950,000

Step 4: Prepare the Direct Manufacturing Labor Costs Budget. In this step, manufacturing managers use *labor standards*, the time allowed per unit of output, to calculate the direct manufacturing labor costs budget in Schedule 4. These costs depend on wage rates, production methods, process and efficiency improvements, and hiring plans.

Schedule 4: Direct Manufacturing Labor Costs Budget
For the Year Ending December 31, 2012

	Output Units Produced (Schedule 2)	Direct Manufacturing Labor-Hours per Unit	Total Hours	Hourly Wage Rate	Total
Casual	60,000	4	240,000	\$20	\$4,800,000
Deluxe	10,000	6	60,000	20	1,200,000
Total			300,000		\$6,000,000

Step 5: Prepare the Manufacturing Overhead Costs Budget. As we described earlier, direct manufacturing labor-hours is the cost driver for the variable portion of manufacturing operations overhead and setup labor-hours is the cost driver for the variable portion of machine setup overhead costs. The use of activity-based cost drivers such as these gives rise to *activity-based budgeting*. **Activity-based budgeting (ABB)** focuses on the budgeted cost of the activities necessary to produce and sell products and services.

For the 300,000 direct manufacturing labor-hours, Stylistic's manufacturing managers estimate various line items of overhead costs that constitute manufacturing operations overhead (that is, all costs for which direct manufacturing labor-hours is the cost driver). Managers identify opportunities for process improvements and determine budgeted manufacturing operations overhead costs in the operating department. They also determine the resources that they will need from the two support departments—kilowatt hours of energy from the power department and hours of maintenance service from the maintenance department. The support department managers, in turn, plan the costs of personnel and supplies that they will need in order to provide the operating department with the support services it requires. The costs of the support departments are then allocated (first-stage cost allocation) as part of manufacturing operations overhead. Chapter 15 describes how the allocation of support department costs to operating departments is done when support departments provide services to each other and to operating departments. The upper half of Schedule 5 shows the various line items of costs that

constitute manufacturing operations overhead costs—that is, all overhead costs that are caused by the 300,000 direct manufacturing labor-hours (the cost driver).

Stylistic's managers determine how setups should be done for the Casual and Deluxe line of tables, taking into account past experiences and potential improvements in setup efficiency.

For example, managers consider the following:

- Increasing the length of the production run per batch so that fewer batches (and therefore fewer setups) are needed for the budgeted production of tables
- Decreasing the setup time per batch
- Reducing the supervisory time needed, for instance by increasing the skill base of workers

Stylistic's managers forecast the following setup information for the Casual and Deluxe tables:

	Casual Tables	Deluxe Tables	Total
1. Quantity of tables to be produced	60,000 tables	10,000 tables	
2. Number of tables to be produced per batch	50 tables/batch	40 tables/batch	
3. Number of batches (1) ÷ (2)	1,200 batches	250 batches	
4. Setup time per batch	10 hours/batch	12 hours/batch	
5. Total setup-hours (3) × (4)	12,000 hours	3,000 hours	15,000 hours
6. Setup-hours per table (5) ÷ (1)	0.2 hour	0.3 hour	

Using an approach similar to the one described for manufacturing operations overhead costs, Stylistic's managers estimate various line items of costs that comprise machine setup overhead costs—that is, all costs that are caused by the 15,000 setup labor-hours (the cost driver). Note how using activity-based cost drivers provide additional and detailed information that improves decision making compared with budgeting based solely on output-based cost drivers. Of course, managers must always evaluate whether the expected benefit of adding more cost drivers exceeds the expected cost.⁵ The bottom half of Schedule 5 summarizes these costs.

**Schedule 5: Manufacturing Overhead Costs Budget
For the Year Ending December 31, 2012
Manufacturing Operations Overhead Costs**

Variable costs			
Supplies		\$1,500,000	
Indirect manufacturing labor		1,680,000	
Power (support department costs)		2,100,000	
Maintenance (support department costs)		<u>1,200,000</u>	\$6,480,000
Fixed costs (to support capacity of 300,000 direct manufacturing labor-hours)			
Depreciation		1,020,000	
Supervision		390,000	
Power (support department costs)		630,000	
Maintenance (support department costs)		<u>480,000</u>	<u>2,520,000</u>
Total manufacturing operations overhead costs			<u>\$9,000,000</u>
Machine Setup Overhead Costs			
Variable costs			
Supplies		\$ 390,000	
Indirect manufacturing labor		840,000	
Power (support department costs)		<u>90,000</u>	\$ 1,320,000
Fixed costs (to support capacity of 15,000 setup labor-hours)			
Depreciation		603,000	
Supervision		1,050,000	
Power (support department costs)		<u>27,000</u>	<u>1,680,000</u>
Total machine setup overhead costs			<u>\$ 3,000,000</u>
Total manufacturing operations overhead costs			<u>\$12,000,000</u>

⁵ The Stylistic example illustrates ABB using setup costs included in Stylistic's manufacturing overhead costs budget. ABB implementations in practice include costs in many parts of the value chain. For an example, see S. Borjesson, "A Case Study on Activity-Based Budgeting," *Journal of Cost Management* 10, no. 4: 7–18.

Step 6: Prepare the Ending Inventories Budget. The management accountant prepares the ending inventories budget, calculated in Schedules 6A and 6B. In accordance with generally accepted accounting principles, Stylistic treats both variable and fixed manufacturing overhead as inventoriable (product) costs. Stylistic is budgeted to operate at capacity. Manufacturing operations overhead costs are allocated to finished goods inventory at the budgeted rate of \$30 per direct manufacturing labor-hour (total budgeted manufacturing operations overhead, \$9,000,000 ÷ 300,000 budgeted direct manufacturing labor-hours). Machine setup overhead costs are allocated to finished goods inventory at the budgeted rate of \$200 per setup-hour (total budgeted machine setup overhead, \$3,000,000 ÷ 15,000 budgeted setup labor-hours). Schedule 6A shows the computation of the unit cost of coffee tables started and completed in 2012.

Schedule 6A: Unit Costs of Ending Finished Goods Inventory
December 31, 2012

	Cost per Unit of Input	Product			
		Casual Tables		Deluxe Tables	
		Input per Unit of Output	Total	Input per Unit of Output	Total
Red Oak	\$ 7	12 b.f.	\$ 84	12 b.f.	\$ 84
Granite	10	6 sq. ft.	60	8 sq. ft.	80
Direct manufacturing labor	20	4 hrs.	80	6 hrs.	120
Manufacturing overhead	30	4 hrs.	120	6 hrs.	180
Machine setup overhead	200	0.2 hrs.	40	0.3 hrs.	60
Total			<u>\$384</u>		<u>\$524</u>

Under the FIFO method, this unit cost is used to calculate the cost of target ending inventories of finished goods in Schedule 6B.

Schedule 6B: Ending Inventories Budget
December 31, 2012

	Quantity	Cost per Unit	Total	
Direct materials				
Red Oak	80,000*	\$ 7	\$ 560,000	
Granite	20,000*	10	<u>200,000</u>	\$ 760,000
Finished goods				
Casual	11,000**	\$384***	\$4,224,000	
Deluxe	500**	524***	<u>262,000</u>	4,486,000
Total ending inventory				<u>\$5,246,000</u>

*Data are from page 191. **Data are from page 191 ***From Schedule 6A, this is based on 2012 costs of manufacturing finished goods because under the FIFO costing method, the units in finished goods ending inventory consists of units that are produced during 2012.

Step 7: Prepare the Cost of Goods Sold Budget. The manufacturing and purchase managers, together with the management accountant, use information from Schedules 3 through 6 to prepare Schedule 7.

Schedule 7: Cost of Goods Sold Budget
For the Year Ending December 31, 2012

	From Schedule	Total
Beginning finished goods inventory, January 1, 2012	Given*	\$ 646,000
Direct materials used	3A	\$10,280,000
Direct manufacturing labor	4	6,000,000
Manufacturing overhead	5	<u>12,000,000</u>
Cost of goods manufactured		28,280,000
Cost of goods available for sale		28,926,000
Deduct ending finished goods inventory, December 31, 2012	6B	<u>4,486,000</u>
Cost of goods sold		<u>\$24,440,000</u>

*Given in the description of basic data and requirements (Casual, \$384,000, Deluxe \$262,000).

Step 8: Prepare the Nonmanufacturing Costs Budget. Schedules 2 through 7 cover budgeting for Stylistic’s production function of the value chain. For brevity, other parts of the value chain—product design, marketing, and distribution—are combined into a single schedule. Just as in the case of manufacturing costs, managers in other functions of the value chain build in process and efficiency improvements and prepare nonmanufacturing cost budgets on the basis of the quantities of cost drivers planned for 2012.

Product design costs are fixed costs, determined on the basis of the product design work anticipated for 2012. The variable component of budgeted marketing costs is the commissions paid to sales people equal to 6.5% of revenues. The fixed component of budgeted marketing costs equal to \$1,330,000 is tied to the marketing capacity for 2012. The cost driver of the variable component of budgeted distribution costs is cubic feet of tables moved (Casual: 18 cubic feet \times 50,000 tables + Deluxe: 24 cubic feet \times 10,000 tables = 1,140,000 cubic feet). Variable distribution costs equal \$2 per cubic foot. The fixed component of budgeted distribution costs equals \$1,596,000 and is tied to the distribution capacity for 2012. Schedule 8 shows the product design, marketing, and distribution costs budget for 2012.

**Schedule 8: Nonmanufacturing Costs Budget
For the Year Ending December 31, 2012**

Business Function	Variable Costs	Fixed Costs	Total Costs
Product design	—	\$1,024,000	\$1,024,000
Marketing (Variable cost: \$38,000,000 \times 0.065)	\$2,470,000	1,330,000	3,800,000
Distribution (Variable cost: \$2 \times 1,140,000 cu. ft.)	<u>2,280,000</u>	<u>1,596,000</u>	<u>3,876,000</u>
	<u>\$4,750,000</u>	<u>\$3,950,000</u>	<u>\$8,700,000</u>

Step 9: Prepare the Budgeted Income Statement. The CEO and managers of various business functions, with help from the management accountant, use information in Schedules 1, 7, and 8 to finalize the budgeted income statement, shown in Exhibit 6-3. The style used in Exhibit 6-3 is typical, but more details could be included in the income statement; the more details that are put in the income statement, the fewer supporting schedules that are needed for the income statement.

Budgeting is a cross-functional activity. Top management’s strategies for achieving revenue and operating income goals influence the costs planned for the different business functions of the value chain. For example, a budgeted increase in sales based on spending more for marketing must be matched with higher production costs to ensure that there is an adequate supply of tables and with higher distribution costs to ensure timely delivery of tables to customers.

Rex Jordan, the CEO of Stylistic Furniture, is very pleased with the 2012 budget. It calls for a 10% increase in operating income compared with 2011. The keys to achieving a higher operating income are a significant increase in sales of Deluxe tables, and process improvements and efficiency gains throughout the value chain. As Rex studies the budget

Exhibit 6-3

Budgeted Income Statement for Stylistic Furniture

Home Insert Page Layout Formulas Data Review View				
	A	B	C	D
1	Budgeted Income Statement for Stylistic Furniture			
2	For the Year Ending December 31, 2012			
3	Revenues	Schedule 1		\$38,000,000
4	Cost of goods sold	Schedule 7		<u>24,440,000</u>
5	Gross margin			13,560,000
6	Operating costs			
7	Product design costs	Schedule 8	\$1,024,000	
8	Marketing costs	Schedule 8	3,800,000	
9	Distribution costs	Schedule 8	<u>3,876,000</u>	<u>8,700,000</u>
10	Operating income			<u>\$ 4,860,000</u>

more carefully, however, he is struck by two comments appended to the budget: First, to achieve the budgeted number of tables sold, Stylistic may need to reduce its selling prices by 3% to \$582 for Casual tables and to \$776 for Deluxe tables. Second, a supply shortage in direct materials may result in a 5% increase in the prices of direct materials (red oak and granite) above the material prices anticipated in the 2012 budget. If direct materials prices increase, however, no reduction in selling prices is anticipated. He asks Tina Larsen, the management accountant, to use Stylistic’s financial planning model to evaluate how these outcomes will affect budgeted operating income.

Decision Point

What is the operating budget and what are its components?

Financial Planning Models and Sensitivity Analysis

Financial planning models are mathematical representations of the relationships among operating activities, financing activities, and other factors that affect the master budget. Companies can use computer-based systems, such as Enterprise Resource Planning (ERP) systems, to perform calculations for these planning models. Companies that use ERP systems, and other such budgeting tools, find that these systems simplify budgeting and reduce the computational burden and time required to prepare budgets. The Concepts in Action box on page 198 provides an example of one such company. ERP systems store vast quantities of information about the materials, machines and equipment, labor, power, maintenance, and setups needed to manufacture different products. Once sales quantities for different products have been identified, the software can quickly compute the budgeted costs for manufacturing these products.

Learning Objective 4

Use computer-based financial planning models in sensitivity analysis

... for example, understand the effects of changes in selling prices and direct material prices on budgeted income

Software packages typically have a module on sensitivity analysis to assist managers in their planning and budgeting activities. *Sensitivity analysis* is a “what-if” technique that examines how a result will change if the original predicted data are not achieved or if an underlying assumption changes.

To see how sensitivity analysis works, we consider two scenarios identified as possibly affecting Stylistic Furniture’s budget model for 2012.

Scenario 1: A 3% decrease in the selling price of the Casual table and a 3% decrease in the selling price of the Deluxe table.

Scenario 2: A 5% increase in the price per board foot of red oak and a 5% increase in the price per square foot of granite.

Exhibit 6-4 presents the budgeted operating income for the two scenarios.

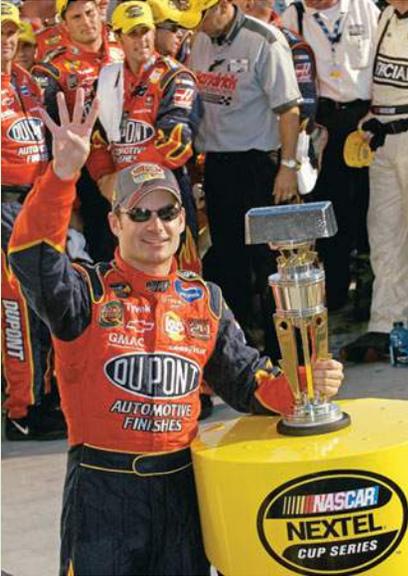
Note that under Scenario 1, a change in selling prices per table affects revenues (Schedule 1) as well as variable marketing costs (sales commissions, Schedule 8). The Problem for Self-Study at the end of the chapter shows the revised schedules for Scenario 1. Similarly, a change in the price of direct materials affects the direct material usage budget (Schedule 3A), the unit cost of ending finished goods inventory (Schedule 6A), the ending

Exhibit 6-4 Effect of Changes in Budget Assumptions on Budgeted Operating Income for Stylistic Furniture

	A	B	C	D	E	F	G	H	I	
1	Key Assumptions									
2		Units Sold		Selling Price		Direct Material Cost		Budgeted Operating Income		
3	What-If Scenario	Casual	Deluxe	Casual	Deluxe	Red Oak	Granite	Dollars	Change from Master Budget	
4	Master budget	50,000	10,000	\$600	\$800	\$7.00	\$10.00	\$4,860,000		
5	Scenario 1	50,000	10,000	582	776	\$7.00	\$10.00	3,794,100	22% decrease	
6	Scenario 2	50,000	10,000	600	800	\$7.35	\$10.50	4,483,800	8% decrease	

Concepts in Action

Web-Enabled Budgeting and Hendrick Motorsports



In recent years, an increasing number of companies have implemented comprehensive software packages that manage budgeting and forecasting functions across the organization. One such option is Microsoft Forecaster, which was originally designed by FRx Software for businesses looking to gain control over their budgeting and forecasting process within a fully integrated Web-based environment.

Among the more unique companies implementing Web-enabled budgeting is Hendrick Motorsports. Featuring champion drivers Jeff Gordon and Jimmie Johnson, Hendrick is the premier NASCAR Sprint Cup stock car racing organization. According to *Forbes* magazine, Hendrick is NASCAR's most valuable team, with an estimated value of \$350 million. Headquartered on a 12 building, 600,000-square-foot campus near Charlotte, North Carolina, Hendrick operates four full-time teams in the Sprint Cup series, which runs annually from February through November and features 36 races at 22 speedways across the United States. The Hendrick organization has annual revenues of close to \$195 million and more than 500 employees, with tasks ranging from accounting and marketing to engine building and racecar driving. Such an environment features multiple functional areas and units, varied worksites, and ever-changing circumstances. Patrick Perkins, director of marketing, noted, "Racing is a fast business. It's just as fast off the track as it is on it.

With the work that we put into development of our teams and technologies, and having to respond to change as well as anticipate change, I like to think of us in this business as change experts."

Microsoft Forecaster, Hendrick's Web-enabled budgeting package, has allowed Hendrick's financial managers to seamlessly manage the planning and budgeting process. Authorized users from each functional area or team sign on to the application through the corporate intranet. Security on the system is tight: Access is limited to only the accounts that a manager is authorized to budget. (For example, Jeff Gordon's crew chief is not able to see what Jimmie Johnson's team members are doing.) Forecaster also allows users at the racetrack to access the application remotely, which allows managers to receive or update real-time "actuals" from the system. This way, team managers know their allotted expenses for each race. Forecaster also provides users with additional features, including seamless links with general ledger accounts and the option to perform what-if (sensitivity) analyses. Scott Lampe, chief financial officer, said, "Forecaster allows us to change our forecasts to respond to changes, either rule changes [such as changes in the series' points system] or technology changes [such as pilot testing NASCAR's new, safer "Car of Tomorrow"] throughout the racing season."

Hendrick's Web-enabled budgeting system frees the finance department so it can work on strategy, analysis, and decision making. It also allows Hendrick to complete its annual budgeting process in only six weeks, a 50% reduction in the time spent budgeting and planning, which is critical given NASCAR's extremely short off-season. Patrick Pearson from Hendrick Motorsports believes the system gives the organization a competitive advantage: "In racing, the team that wins is not only the team with the fastest car, but the team that is the most disciplined and prepared week in and week out. Forecaster allows us to respond to that changing landscape."

Sources: Gage, Jack. 2009. Nascar's most valuable teams. *Forbes.com*, June 3. <http://www.forbes.com/2009/06/03/nascar-most-valuable-teams-business-sports-nascar.html>; Goff, John. 2004. In the fast lane. *CFO Magazine*, December 1; Hendrick Motorsports. 2010. About Hendrick Motorsports. Hendrick Motorsports Web site, May 28. www.hendrickmotorsports.com; Lampe, Scott. 2003. NASCAR racing team stays on track with FRx Software's comprehensive budget planning solution. *DM Review*, July 1; Microsoft Corporation. 2009. Microsoft Forecaster: Hendrick Motorsports customer video. October 8. http://www.microsoft.com/BusinessSolutions/frx_hendrick_video.msp; Ryan, Nate. 2006. Hendrick empire strikes back with three contenders in chase for the Nextel Cup. *USA Today*, September 17.

finished goods inventories budget (in Schedule 6B) and the cost of goods sold budget (Schedule 7). Sensitivity analysis is especially useful in incorporating such interrelationships into budgeting decisions by managers.

Exhibit 6-4 shows a substantial decrease in operating income as a result of decreases in selling prices but a smaller decline in operating income if direct material prices increase by 5%. The sensitivity analysis prompts Stylistic's managers to put in place contingency plans. For example, should selling prices decline in 2012, Stylistic may choose to postpone some

product development programs that it had included in its 2012 budget but that could be deferred to a later year. More generally, when the success or viability of a venture is highly dependent on attaining one or more targets, managers should frequently update their budgets as uncertainty is resolved. These updated budgets can help managers to adjust expenditure levels as circumstances change.

Instructors and students who, at this point, want to explore the cash budget and the budgeted balance sheet for the Stylistic Furniture example can skip ahead to the appendix on page 206.

Decision Point

How can managers plan for changes in the assumptions underlying the budget?

Budgeting and Responsibility Accounting

To attain the goals described in the master budget, a company must coordinate the efforts of all its employees—from the top executive through all levels of management to every supervised worker. Coordinating the company's efforts means assigning responsibility to managers who are accountable for their actions in planning and controlling human and other resources. How each company structures its own organization significantly shapes how the company's efforts will be coordinated.

Organization Structure and Responsibility

Organization structure is an arrangement of lines of responsibility within the organization. A company such as ExxonMobil is organized by business function—exploration, refining, marketing, and so on—with the president of each business-line company having decision-making authority over his or her function. Another company, such as Procter & Gamble, the household-products giant, is organized primarily by product line or brand. The managers of the individual divisions (toothpaste, soap, and so on) would each have decision-making authority concerning all the business functions (manufacturing, marketing, and so on) within that division.

Each manager, regardless of level, is in charge of a responsibility center. A **responsibility center** is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities. The higher the manager's level, the broader the responsibility center and the larger the number of his or her subordinates. **Responsibility accounting** is a system that measures the plans, budgets, actions, and actual results of each responsibility center. Four types of responsibility centers are as follows:

1. **Cost center**—the manager is accountable for costs only.
2. **Revenue center**—the manager is accountable for revenues only.
3. **Profit center**—the manager is accountable for revenues and costs.
4. **Investment center**—the manager is accountable for investments, revenues, and costs.

The maintenance department of a Marriott hotel is a cost center because the maintenance manager is responsible only for costs, so this budget is based on costs. The sales department is a revenue center because the sales manager is responsible primarily for revenues, so this budget is based on revenues. The hotel manager is in charge of a profit center because the manager is accountable for both revenues and costs, so this budget is based on revenues and costs. The regional manager responsible for determining the amount to be invested in new hotel projects and for revenues and costs generated from these investments is in charge of an investment center, so this budget is based on revenues, costs, and the investment base.

A responsibility center can be structured to promote better alignment of individual and company goals. For example, until recently, OPD, an office products distributor, operated its sales department as a revenue center. Each salesperson received a commission of 3% of the revenues per order, regardless of its size, the cost of processing it, or the cost of delivering the office products. An analysis of customer profitability at OPD found that many customers were unprofitable. The main reason was the high ordering and delivery costs of small orders. OPD's managers decided to make the sales department a profit center, accountable for revenues and costs, and to change the incentive system for salespeople

Learning Objective 5

Describe responsibility centers

... a part of an organization that a manager is accountable for

and responsibility accounting

... measurement of plans and actual results that a manager is accountable for

to 15% of the monthly profits per customer. The costs for each customer included the ordering and delivery costs. The effect of this change was immediate. The sales department began charging customers for ordering and delivery, and salespeople at OPD actively encouraged customers to consolidate their purchases into fewer orders. As a result, each order began producing larger revenues. Customer profitability increased because of a 40% reduction in ordering and delivery costs in one year.

Feedback

Budgets coupled with responsibility accounting provide feedback to top management about the performance relative to the budget of different responsibility center managers.

Differences between actual results and budgeted amounts—called *variances*—if properly used, can help managers implement and evaluate strategies in three ways:

1. **Early warning.** Variances alert managers early to events not easily or immediately evident. Managers can then take corrective actions or exploit the available opportunities. For example, after observing a small decline in sales this period, managers may want to investigate if this is an indication of an even steeper decline to follow later in the year.
2. **Performance evaluation.** Variances prompt managers to probe how well the company has performed in implementing its strategies. Were materials and labor used efficiently? Was R&D spending increased as planned? Did product warranty costs decrease as planned?
3. **Evaluating strategy.** Variances sometimes signal to managers that their strategies are ineffective. For example, a company seeking to compete by reducing costs and improving quality may find that it is achieving these goals but that it is having little effect on sales and profits. Top management may then want to reevaluate the strategy.

Responsibility and Controllability

Controllability is the degree of influence that a specific manager has over costs, revenues, or related items for which he or she is responsible. A **controllable cost** is any cost that is primarily subject to the influence of a given *responsibility center manager* for a given *period*. A responsibility accounting system could either exclude all uncontrollable costs from a manager's performance report or segregate such costs from the controllable costs. For example, a machining supervisor's performance report might be confined to direct materials, direct manufacturing labor, power, and machine maintenance costs and might exclude costs such as rent and taxes paid on the plant.

In practice, controllability is difficult to pinpoint for at least two reasons:

1. Few costs are clearly under the sole influence of one manager. For example, prices of direct materials may be influenced by a purchasing manager, but these prices also depend on market conditions beyond the manager's control. Quantities used may be influenced by a production manager, but quantities used also depend on the quality of materials purchased. Moreover, managers often work in teams. Think about how difficult it is to evaluate individual responsibility in a team situation.
2. With a long enough time span, all costs will come under somebody's control. However, most performance reports focus on periods of a year or less. A current manager may benefit from a predecessor's accomplishments or may inherit a predecessor's problems and inefficiencies. For example, present managers may have to work under undesirable contracts with suppliers or labor unions that were negotiated by their predecessors. How can we separate what the current manager actually controls from the results of decisions made by others? Exactly what is the current manager accountable for? Answers may not be clear-cut.

Executives differ in how they embrace the controllability notion when evaluating those reporting to them. Some CEOs regard the budget as a firm commitment that subordinates must meet. Failure to meet the budget is viewed unfavorably. Other CEOs believe a more risk-sharing approach with managers is preferable, in which noncontrollable factors and performance relative to competitors are taken into account when judging the performance of managers who fail to meet their budgets.

Managers should avoid overemphasizing controllability. Responsibility accounting is more far-reaching. It focuses on gaining *information and knowledge*, not only on control. *Responsibility accounting helps managers to first focus on whom they should ask to obtain information and not on whom they should blame.* For example, if actual revenues at a Marriott hotel are less than budgeted revenues, the managers of the hotel may be tempted to blame the sales manager for the poor performance. The fundamental purpose of responsibility accounting, however, is not to fix blame but to gather information to enable future improvement.

Managers want to know who can tell them the most about the specific item in question, regardless of that person's ability to exert personal control over that item. For instance, purchasing managers may be held accountable for total purchase costs, not because of their ability to control market prices, but because of their ability to predict uncontrollable prices and to explain uncontrollable price changes. Similarly, managers at a Pizza Hut unit may be held responsible for operating income of their units, even though they (a) do not fully control selling prices or the costs of many food items and (b) have minimal flexibility about what items to sell or the ingredients in the items they sell. They are, however, in the best position to explain differences between their actual operating incomes and their budgeted operating incomes.

Performance reports for responsibility centers are sometimes designed to change managers' behavior in the direction top management desires. A cost-center manager may emphasize efficiency and deemphasize the pleas of sales personnel for faster service and rush orders. When evaluated as a profit center, the manager will more likely consider ways to influence activities that affect sales and weigh the impact of decisions on costs and revenues rather than on costs alone. To induce that change, some companies have changed the accountability of a cost center to a profit center. Call centers are an interesting example of this trend. As firms continue to differentiate on customer service while attempting to control operating expenses, driving efficiency wherever possible in the call centers has become a critical issue—as has driving revenue through this unique channel. There is increasing pressure for customer service representatives to promote new offers through upsell and cross-sell tactics. Microsoft, Oracle, and others offer software platforms that seek to evolve the call center from cost center to profit center. The new adage is, “Every service call is a sales call.”

Human Aspects of Budgeting

Why did we discuss the two major topics, the master budget and responsibility accounting, in the same chapter? Primarily to emphasize that human factors are crucial in budgeting. Too often, budgeting is thought of as a mechanical tool as the budgeting techniques themselves are free of emotion. However, the administration of budgeting requires education, persuasion, and intelligent interpretation.

Budgetary Slack

As we discussed earlier in this chapter, budgeting is most effective when lower-level managers actively participate and meaningfully engage in the budgeting process. Participation adds credibility to the budgeting process and creates greater commitment and accountability toward the budget. But participation requires “honest” communication about the business from subordinates and lower-level managers to their bosses.

At times, subordinates may try to “play games” and build in *budgetary slack*. **Budgetary slack** describes the practice of underestimating budgeted revenues, or overestimating budgeted costs, to make budgeted targets more easily achievable. It frequently occurs when budget variances (the differences between actual results and budgeted amounts) are used to evaluate performance. Line managers are also unlikely to be fully honest in their budget communications if top management mechanically institutes across-the-board cost reductions (say, a 10% reduction in all areas) in the face of projected revenue reductions.

Budgetary slack provides managers with a hedge against unexpected adverse circumstances. But budgetary slack also misleads top management about the true profit potential

Decision Point

How do companies use responsibility centers? Should performance reports of responsibility center managers include only costs the manager can control?

Learning Objective
6

Recognize the human aspects of budgeting

... to engage subordinate managers in the budgeting process

of the company, which leads to inefficient resource planning and allocation and poor coordination of activities across different parts of the company.

To avoid problems of budgetary slack, some companies use budgets primarily for planning purposes. They evaluate managerial performance using multiple indicators that take into account various factors such as the prevailing business environment and performance relative to competitors. Evaluating performance in this way takes time and requires careful exercise of judgment. Other companies use budgets for both planning and performance evaluation and use different approaches to obtain accurate information.

To explain one approach, let's consider the plant manager of a beverage bottler who is suspected by top management of understating the productivity potential of the bottling lines in his forecasts for the coming year. His presumed motivation is to increase the likelihood of meeting next year's production bonus targets. Suppose top management could purchase a consulting firm's study that reports productivity levels—such as the number of bottles filled per hour—at a number of comparable plants owned by other bottling companies. This report shows that its own plant manager's productivity forecasts are well below the actual productivity levels being achieved at other comparable plants.

Top management could share this independent information source with the plant manager and ask him to explain why his productivity differs from that at other similar plants. Management could also base part of the plant manager's compensation on his plant's productivity in comparison with other “benchmark” plants rather than on the forecasts he provided. Using external benchmark performance measures reduces a manager's ability to set budget levels that are easy to achieve.⁶

Another approach to reducing budgetary slack is for managers to involve themselves regularly in understanding what their subordinates are doing. Such involvement should not result in managers dictating the decisions and actions of subordinates. Rather, a manager's involvement should take the form of providing support, challenging in a motivational way the assumptions subordinates make, and enhancing mutual learning about the operations. Regular interaction with subordinates allows managers to become knowledgeable about the operations and diminishes the ability of subordinates to create slack in their budgets.

Part of top management's responsibility is to promote commitment among the employees to a set of core values and norms. These values and norms describe what constitutes acceptable and unacceptable behavior. For example, Johnson & Johnson (J&J) has a credo that describes its responsibilities to doctors, patients, employees, communities, and shareholders. Employees are trained in the credo to help them understand the behavior that is expected of them. Managers are often promoted from within and are therefore very familiar with the work of the employees reporting to them. Managers also have the responsibility to interact with and mentor their subordinates. These values and practices create a culture at J&J that discourages budgetary slack.

Some companies, such as IBM and Kodak, have designed innovative performance evaluation measures that reward managers based on the subsequent accuracy of the forecasts used in preparing budgets. For example, the *higher and more accurate* the budgeted profit forecasts of division managers, the higher their incentive bonuses.

Many of the best performing companies, such as General Electric, Microsoft, and Novartis, set “stretch” targets. Stretch targets are challenging but achievable levels of expected performance, intended to create a little discomfort and to motivate employees to exert extra effort and attain better performance. Organizations such as Goldman Sachs also use “horizontal” stretch goal initiatives. The aim is to enhance professional development of employees by asking them to take on significantly different responsibilities or roles outside their comfort zone.

Many managers regard budgets negatively. To them, the word budget is about as popular as, say, *downsizing*, *layoff*, or *strike*. Top managers must convince their subordinates that the budget is a tool designed to help them set and reach goals. Whatever the manager's perspective on budgets—pro or con—budgets are not remedies for weak management talent, faulty organization, or a poor accounting system.

⁶ For an excellent discussion of these issues, see Chapter 14 (“Formal Models in Budgeting and Incentive Contracts”) of R. S. Kaplan and A. A. Atkinson, *Advanced Management Accounting*, 3rd ed. (Upper Saddle River, NJ: Prentice Hall, 1998).

The management style of executives is a factor in how budgets are perceived in companies. Some CEOs argue that “numbers always tell the story.” An executive once noted, “You can miss your plan once, but you wouldn’t want to miss it twice.” Other CEOs believe “too much focus on making the numbers in a budget” can lead to poor decision making and unethical practices.

Kaizen Budgeting

Chapter 1 noted the importance of continuous improvement, or *kaizen* in Japanese. **Kaizen budgeting** explicitly incorporates continuous improvement anticipated during the budget period into the budget numbers. Many companies that have cost reduction as a strategic focus, including General Electric in the United States and Citizens Watch and Toyota in Japan, use kaizen budgeting to continuously reduce costs. Much of the cost reduction associated with kaizen budgeting arises from many small improvements rather than “quantum leaps.”

A significant aspect of kaizen budgeting is employee suggestions. Companies implementing kaizen budgeting believe that employees who actually do the job, whether in manufacturing, sales, or distribution, have the best information and knowledge of how the job can be done better. These companies create a culture in which employee suggestions are valued, recognized, and rewarded.

As an example, throughout our nine budgeting steps for Stylistic Furniture, we assumed four hours of direct labor time to manufacture each Casual coffee table. A kaizen budgeting approach would incorporate continuous improvement resulting from, for example, employee suggestions for doing the work faster or reducing idle time. The kaizen budget might then prescribe 4.00 direct manufacturing labor-hours per table for the first quarter of 2012, 3.95 hours for the second quarter, 3.90 hours for the third quarter, and so on. The implications of these reductions would be lower direct manufacturing labor costs, as well as lower variable manufacturing overhead costs, because direct manufacturing labor is the driver of these costs. If these continuous improvement goals are not met, Stylistic’s managers will explore the reasons behind it and either adjust the targets or implement process changes that will accelerate continuous improvement.

Kaizen budgeting can also be applied to activities such as setups with the goal of reducing setup time and setup costs, or distribution with the goal of reducing the cost of moving each cubic foot of table. Kaizen budgeting and budgeting for specific activities are key building blocks of the master budget. Interestingly, companies are not the only ones interested in kaizen techniques. A growing number of cash-strapped states in the United States are bringing together government workers, regulators, and end users of government processes to identify ways to attack inefficiencies arising from bureaucratic procedures. Environmental regulators, whose cumbersome processes have long been the targets of business developers, have taken particular interest in kaizen. By the end of 2008, 29 state environmental agencies had conducted a kaizen session or were planning one.⁷ How successful these efforts will be depends heavily on human factors such as the commitment and engagement of the individuals involved.

Budgeting in Multinational Companies

Multinational companies, such as Federal Express, Kraft, and Pfizer, have operations in many countries. An international presence carries with it positives—access to new markets and resources—and negatives—operating in less-familiar business environments and exposure to currency fluctuations. For example, multinational companies earn revenues and incur expenses in many different currencies, and they must translate their operating performance into a single currency (say, U.S. dollars) for reporting results to their shareholders each quarter. This translation is based on the average exchange rates that prevail during the quarter. That is, in addition to budgeting in different currencies, management accountants in multinational companies also need to budget for foreign exchange rates. This is difficult because management accountants need to anticipate potential changes

⁷ For details, see “State governments, including Ohio’s, embrace Kaizen to seek efficiency via Japanese methods,” www.cleveland.com, (December 12, 2008).

Decision Point

Why are human factors crucial in budgeting?

Learning Objective 7

Appreciate the special challenges of budgeting in multinational companies

... exposure to currency fluctuations and to different legal, political, and economic environments

that might take place during the year. Exchange rates are constantly fluctuating, so to reduce the possible negative impact on performance caused by unfavorable exchange rate movements, finance managers will frequently use sophisticated techniques such as forward, future, and option contracts to minimize exposure to foreign currency fluctuations. Besides currency issues, multinational companies need to understand the political, legal, and, in particular, economic environments of the different countries in which they operate. For example, in countries such as Zimbabwe, Iraq, and Guinea, annual inflation rates are very high, resulting in sharp declines in the value of the local currency. Issues related to differences in tax regimes are also critical, especially when the company transfers goods or services across the many countries in which it operates.

Multinational companies find budgeting to be a valuable tool when operating in very uncertain environments. As circumstances and conditions change, companies revise their budgets. The purpose of budgeting in such environments is not to evaluate performance relative to budgets, which is a meaningless comparison when conditions are so volatile, but to help managers throughout the organization to learn and to adapt their plans to the changing conditions and to communicate and coordinate the actions that need to be taken throughout the company. Senior managers evaluate performance more subjectively, based on how well subordinate managers have managed in these uncertain environments.

Decision Point

What are the special challenges involved in budgeting at multinational companies?

Problem for Self-Study

Consider the Stylistic Furniture example described earlier. Suppose that to maintain its sales quantities, Stylistic needs to decrease selling prices to \$582 per Casual table and \$776 per Deluxe table, a 3% decrease in the selling prices used in the chapter illustration. All other data are unchanged.

Required

Prepare a budgeted income statement, including all necessary detailed supporting budget schedules that are different from the schedules presented in the chapter. Indicate those schedules that will remain unchanged.

Solution

Schedules 1 and 8 will change. Schedule 1 changes because a change in selling price affects revenues. Schedule 8 changes because revenues are a cost driver of marketing costs (sales commissions). The remaining schedules will not change because a change in selling price has no effect on manufacturing costs. The revised schedules and the new budgeted income statement follow:

Schedule 1: Revenue Budget
For the Year Ending December 31, 2012

	Selling Price	Units	Total Revenues
Casual tables	\$582	50,000	\$29,100,000
Deluxe tables	776	10,000	<u>7,760,000</u>
Total			<u>\$36,860,000</u>

Schedule 8: Nonmanufacturing Costs Budget
For the Year Ending December 31, 2012

Business Function	Variable Costs	Fixed Costs (as in Schedule 8, p. 196)	Total Costs
Product design		\$1,024,000	\$1,024,000
Marketing (Variable cost: \$36,860,000 × 0.065)	\$2,395,900	1,330,000	3,725,900
Distribution (Variable cost: \$2 × 1,140,000 cu. ft.)	<u>2,280,000</u>	<u>1,596,000</u>	<u>3,876,000</u>
	<u>\$4,675,900</u>	<u>\$3,950,000</u>	<u>\$8,625,900</u>

Stylistic Furniture		
Budgeted Income Statement		
For the Year Ending December 31, 2012		
Revenues	Schedule 1	\$36,860,000
Cost of goods sold	Schedule 7	<u>24,440,000</u>
Gross margin		12,420,000
Operating costs		
Product design	Schedule 8	\$1,024,000
Marketing costs	Schedule 8	3,725,900
Distribution costs	Schedule 8	<u>3,876,000</u>
		<u>8,625,900</u>
Operating income		<u>\$ 3,794,100</u>

Decision Points

The following question-and-answer format summarizes the chapter's learning objectives. Each decision presents a key question related to a learning objective. The guidelines are the answer to that question.

Decision

1. What is the master budget and why is it useful?

2. When should a company prepare budgets? What are the advantages of preparing budgets?

3. What is the operating budget and what are its components?

4. How can managers plan for changes in the assumptions underlying the budget?

Guidelines

The master budget summarizes the financial projections of all the company's budgets. It expresses management's operating and financing plans—the formalized outline of the company's financial objectives and how they will be attained. Budgets are tools that, by themselves, are neither good nor bad. Budgets are useful when administered skillfully.

Budgets should be prepared when their expected benefits exceed their expected costs. The advantages of budgets include the following: (a) they compel strategic analysis and planning, (b) they promote coordination and communication among subunits of the company, (c) they provide a framework for judging performance and facilitating learning, and (d) they motivate managers and other employees.

The operating budget is the budgeted income statement and its supporting budget schedules. The starting point for the operating budget is generally the revenues budget. The following supporting schedules are derived from the revenues budget and the activities needed to support the revenues budget: production budget, direct material usage budget, direct material purchases budget, direct manufacturing labor cost budget, manufacturing overhead costs budget, ending inventories budget, cost of goods sold budget, R&D/product design cost budget, marketing cost budget, distribution cost budget, and customer-service cost budget.

Managers can use financial planning models—mathematical statements of the relationships among operating activities, financing activities, and other factors that affect the budget. These models make it possible for management to conduct what-if (sensitivity) analysis of the effects that changes in the original predicted data or changes in underlying assumptions would have on the master budget and to develop plans to respond to changed conditions.

5. How do companies use responsibility centers? Should performance reports of responsibility center managers include only costs the manager can control?
- A responsibility center is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities. Four types of responsibility centers are cost centers, revenue centers, profit centers, and investment centers. Responsibility accounting systems are useful because they measure the plans, budgets, actions, and actual results of each responsibility center. Controllable costs are costs primarily subject to the influence of a given responsibility center manager for a given time period. Performance reports of responsibility center managers often include costs, revenues, and investments that the managers cannot control. Responsibility accounting associates financial items with managers on the basis of which manager has the most knowledge and information about the specific items, regardless of the manager's ability to exercise full control.
6. Why are human factors crucial in budgeting?
- The administration of budgets requires education, participation, persuasion, and intelligent interpretation. When wisely administered, budgets create commitment, accountability, and honest communication, and can be used as the basis for continuous improvement efforts. When badly managed, budgeting can lead to game-playing and budgetary slack—the practice of making budget targets more easily achievable.
7. What are the special challenges involved in budgeting at multinational companies?
- Budgeting is a valuable tool for multinational companies but is made difficult by the enormous uncertainties inherent in operating in multiple countries. In addition to budgeting in different currencies, management accountants in multinational companies also need to budget for foreign exchange rates. Besides currency issues, multinational companies need to understand the political, legal, and economic environments of the different countries in which they operate.

Appendix

The Cash Budget

The chapter illustrated the operating budget, which is one part of the master budget. The other part is the financial budget, which comprises the capital expenditures budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows. This appendix focuses on the cash budget and the budgeted balance sheet. Capital budgeting is discussed in Chapter 21. The budgeted statement of cash flows is beyond the scope of this book, and generally is covered in financial accounting and corporate finance courses.

Suppose Stylistic Furniture had the balance sheet for the year ended December 31, 2011, shown in Exhibit 6-5. The budgeted cash flows for 2012 are as follows:

	Quarters			
	1	2	3	4
Collections from customers	\$9,136,600	\$10,122,000	\$10,263,200	\$8,561,200
Disbursements				
Direct materials	2,947,605	2,714,612	2,157,963	2,155,356
Payroll	3,604,512	2,671,742	2,320,946	2,562,800
Manufacturing overhead costs	2,109,018	1,530,964	1,313,568	1,463,450
Nonmanufacturing costs	1,847,750	1,979,000	1,968,250	1,705,000
Machinery purchase	—	—	758,000	—
Income taxes	725,000	400,000	400,000	400,000

The quarterly data are based on the budgeted cash effects of the operations formulated in Schedules 1 through 8 in the chapter, but the details of that formulation are not shown here to keep this illustration as brief and as focused as possible.

The company wants to maintain a \$350,000 minimum cash balance at the end of each quarter. The company can borrow or repay money at an interest rate of 12% per year. Management does not want to borrow any more short-term cash than is necessary. By special arrangement, interest is computed and paid when the principal is repaid.

Exhibit 6-5

Balance Sheet for
Stylistic Furniture,
December 31, 2011

	A	B	C	D
1	Stylistic Furniture			
2	Balance Sheet			
3	December 31, 2011			
4	Assets			
5	Current assets			
6	Cash		\$ 300,000	
7	Accounts receivable		1,711,000	
8	Direct materials inventory		1,090,000	
9	Finished goods inventory		<u>646,000</u>	\$ 3,747,000
10	Property, plant, and equipment:			
11	Land		2,000,000	
12	Building and equipment	\$22,000,000		
13	Accumulated depreciation	<u>(6,900,000)</u>	<u>15,100,000</u>	<u>17,100,000</u>
14	Total			<u>\$20,847,000</u>
15	Liabilities and Stockholders' Equity			
16	Current liabilities			
17	Accounts payable		\$ 904,000	
18	Income taxes payable		<u>325,000</u>	\$ 1,229,000
19	Stockholders' equity			
20	Common stock, no-par, 25,000 shares outstanding		3,500,000	
21	Retained earnings		<u>16,118,000</u>	<u>19,618,000</u>
22	Total			<u>\$20,847,000</u>

Assume, for simplicity, that borrowing takes place at the beginning and repayment at the end of the quarter under consideration (in multiples of \$1,000). Interest is computed to the nearest dollar.

Suppose the management accountant at Stylistic is given the preceding data and the other data contained in the budgets in the chapter (pp. 189–197). She is instructed as follows:

1. Prepare a cash budget for 2012 by quarter. That is, prepare a statement of cash receipts and disbursements by quarter, including details of borrowing, repayment, and interest.
2. Prepare a budgeted income statement for the year ending December 31, 2012. This statement should include interest expense and income taxes (at a rate of 40% of operating income).
3. Prepare a budgeted balance sheet on December 31, 2012.

Preparation of Budgets

1. The **cash budget** (Exhibit 6-6) is a schedule of expected cash receipts and disbursements. It predicts the effects on the cash position at the given level of operations. Exhibit 6-6 presents the cash budget by quarters to show the impact of cash flow timing on bank loans and their repayment. In practice, monthly—and sometimes weekly or even daily—cash budgets are critical for cash planning and control. Cash budgets help avoid unnecessary idle cash and unexpected cash deficiencies. They thus keep cash balances in line with needs. Ordinarily, the cash budget has these main sections:
 - a. **Cash available for needs (before any financing).** The beginning cash balance plus cash receipts equals the total cash available for needs before any financing. Cash receipts depend on collections of accounts receivable, cash sales, and miscellaneous recurring sources, such as rental or royalty receipts. Information on the expected collectibility of accounts receivable is needed for accurate predictions. Key factors include bad-debt (uncollectible accounts) experience (not an issue in the Stylistic case because Stylistic sells to only a few large wholesalers) and average time lag between sales and collections.
 - b. **Cash disbursements.** Cash disbursements by Stylistic Furniture include the following:
 - i. *Direct material purchases.* Suppliers are paid in full three weeks after the goods are delivered.

Exhibit 6-6

Cash Budget for Stylistic Furniture for the Year Ending December 31, 2012

Stylistic Furniture						
Cash Budget						
For Year Ending December 31, 2012						
	Quarters				Year as a	
	1	2	3	4	Whole	
6	Cash balance, beginning	\$ 300,000	\$ 350,715	\$ 350,657	\$ 350,070	\$ 300,000
7	Add receipts					
8	Collections from customers	9,136,600	10,122,000	10,263,200	8,561,200	38,083,000
9	Total cash available for needs (x)	9,436,600	10,472,715	10,613,857	8,911,270	38,383,000
10	Deduct disbursements					
11	Direct materials	2,947,605	2,714,612	2,157,963	2,155,356	9,975,536
12	Payroll	3,604,512	2,671,742	2,320,946	2,562,800	11,160,000
13	Manufacturing overhead costs	2,109,018	1,530,964	1,313,568	1,463,450	6,417,000
14	Nonmanufacturing costs	1,847,750	1,979,000	1,968,250	1,705,000	7,500,000
15	Machinery purchase			758,000		758,000
16	Income taxes	725,000	400,000	400,000	400,000	1,925,000
17	Total disbursements (y)	11,233,885	9,296,318	8,918,727	8,286,606	37,735,536
18	Minimum cash balance desired	350,000	350,000	350,000	350,000	350,000
19	Total cash needed	11,583,885	9,646,318	9,268,727	8,636,606	38,085,536
20	Cash excess (deficiency)*	\$ (2,147,285)	\$ 826,397	\$ 1,345,130	\$ 274,664	\$ 297,464
21	Financing					
22	Borrowing (at beginning)	\$ 2,148,000	\$ 0	\$ 0	\$ 0	\$ 2,148,000
23	Repayment (at end)	0	(779,000)	(1,234,000)	(135,000)	(2,148,000)
24	Interest (at 12% per year)**	0	(46,740)	(111,060)	(16,200)	(174,000)
25	Total effects of financing (z)	\$ 2,148,000	\$ (825,740)	\$ (1,345,060)	\$ (151,200)	\$ (174,000)
26	Cash balance, ending***	\$ 350,715	\$ 350,657	\$ 350,070	\$ 473,464	\$ 473,464
27	*Excess of total cash available for needs – Total cash needed before financing.					
28	**Note that the short-term interest payments pertain only to the amount of principal being repaid at the end of a quarter. The specific computations regarding interest are $\$779,000 \times 0.12 \times 0.5 = \$46,740$; $\$1,234,000 \times 0.12 \times 0.75 = \$111,060$; $\$135,000 \times 0.12 = \$16,200$. Also note that <i>depreciation does not require a cash outlay</i> .					
29	***Ending cash balance = Total cash available for needs (x) – Total disbursements (y) + Total effects of financing (z)					

- ii. *Direct labor and other wage and salary outlays.* All payroll-related costs are paid in the month in which the labor effort occurs.
 - iii. *Other costs.* These depend on timing and credit terms. (In the Stylistic case, all other costs are paid in the month in which the cost is incurred.) *Note, depreciation does not require a cash outlay.*
 - iv. *Other disbursements.* These include outlays for property, plant, equipment, and other long-term investments.
 - v. Income tax payments.
- c. **Financing effects.** Short-term financing requirements depend on how the total cash available for needs [keyed as (x) in Exhibit 6-6] compares with the total cash disbursements [keyed as (y)], plus the minimum ending cash balance desired. The financing plans will depend on the relationship between total cash available for needs and total cash needed. If there is a deficiency of cash, loans will be obtained. If there is excess cash, any outstanding loans will be repaid.
- d. **Ending cash balance.** The cash budget in Exhibit 6-6 shows the pattern of short-term “self-liquidating” cash loans. In quarter 1, Stylistic budgets a \$2,147,285 cash deficiency. Hence, it undertakes short-term borrowing of \$2,148,000 that it pays off over the course of the year. Seasonal peaks of production or sales often result in heavy cash disbursements for purchases, payroll, and other operating outlays as the products are produced and sold. Cash receipts from customers typically lag behind sales. The loan is *self-liquidating* in the sense that

the borrowed money is used to acquire resources that are used to produce and sell finished goods, and the proceeds from sales are used to repay the loan. This self-liquidating cycle is the movement from cash to inventories to receivables and back to cash.

- The budgeted income statement is presented in Exhibit 6-7. It is merely the budgeted operating income statement in Exhibit 6-3 (p. 196) expanded to include interest expense and income taxes.
- The budgeted balance sheet is presented in Exhibit 6-8. Each item is projected in light of the details of the business plan as expressed in all the previous budget schedules. For example, the ending balance of accounts receivable of \$1,628,000 is computed by adding the budgeted revenues of \$38,000,000 (from Schedule 1 on page 191) to the beginning balance of accounts receivable of \$1,711,000 (from Exhibit 6-5) and subtracting cash receipts of \$38,083,000 (from Exhibit 6-6).

For simplicity, the cash receipts and disbursements were given explicitly in this illustration. Usually, the receipts and disbursements are calculated based on the lags between the items reported on the accrual basis of accounting in an income statement and balance sheet and their related cash receipts and disbursements. Consider accounts receivable. In the first three quarters, Stylistic estimates that 80% of all sales made in a quarter are collected in the same quarter and 20% are collected in the following quarter. Estimated collections from customers each quarter are calculated in the following table (assuming sales by quarter of \$9,282,000; \$10,332,000; \$10,246,000; and \$8,140,000 that equal 2012 budgeted sales of \$38,000,000).

Schedule of Cash Collections

	Quarters			
	1	2	3	4
Accounts receivable balance on 1-1-2012 (p. 207)				
(Fourth quarter sales from prior year collected in first quarter of 2012)	\$1,711,000			
From first-quarter 2012 sales ($9,282,000 \times 0.80$; $9,282,000 \times 0.20$)	7,425,600	\$ 1,856,400		
From second-quarter 2012 sales ($10,332,000 \times 0.80$; $10,332,000 \times 0.20$)		8,265,600	\$ 2,066,400	
From third-quarter 2012 sales ($10,246,000 \times 0.80$; $10,246,000 \times 0.20$)			8,196,800	\$2,049,200
From fourth-quarter 2012 sales ($8,140,000 \times 0.80$)				6,512,000
Total collections	<u>\$9,136,600</u>	<u>\$10,122,000</u>	<u>\$10,263,200</u>	<u>\$8,561,200</u>

Note that the quarterly cash collections from customers calculated in this schedule equal the cash collections by quarter shown on page 206. Furthermore, the difference between fourth-quarter sales and the cash collected from fourth-quarter sales, $\$8,140,000 - \$6,512,000 = \$1,628,000$ appears as accounts receivable in the budgeted balance sheet as of December 31, 2012 (see Exhibit 6-8).

Home Insert Page Layout Formulas Data Review View				
	A	B	C	D
1	Stylistic Furniture			
2	Budgeted Income Statement			
3	For the Year Ending December 31, 2012			
4	Revenues	Schedule 1		\$38,000,000
5	Cost of goods sold	Schedule 7		<u>24,440,000</u>
6	Gross margin			13,560,000
7	Operating costs			
8	Product design costs	Schedule 8	\$1,024,000	
9	Marketing costs	Schedule 8	3,800,000	
10	Distribution costs	Schedule 8	<u>3,876,000</u>	<u>8,700,000</u>
11	Operating income			4,860,000
12	Interest expense	Exhibit 6-6		<u>174,000</u>
13	Income before income taxes			4,686,000
14	Income taxes (at 40%)			<u>1,874,400</u>
15	Net income			<u>\$ 2,811,600</u>

Exhibit 6-7

Budgeted Income Statement for Stylistic Furniture for the Year Ending December 31, 2012

Exhibit 6-8

Budgeted Balance Sheet for Stylistic Furniture, December 31, 2012

	A	B	C	D
1	Stylistic Furniture			
2	Budgeted Balance Sheet			
3	December 31, 2012			
4	Assets			
5	Current assets			
6	Cash (from Exhibit 6-6)		\$ 473,464	
7	Accounts receivable (1)		1,628,000	
8	Direct materials inventory (2)		760,000	
9	Finished goods inventory (2)		<u>4,486,000</u>	\$ 7,347,464
10	Property, plant, and equipment			
11	Land (3)		2,000,000	
12	Building and equipment (4)	\$22,758,000		
13	Accumulated depreciation (5)	<u>(8,523,000)</u>	<u>14,235,000</u>	<u>16,235,000</u>
14	Total			<u>\$23,582,464</u>
15	Liabilities and Stockholders' Equity			
16	Current liabilities			
17	Accounts payable (6)		\$ 878,464	
18	Income taxes payable (7)		<u>274,400</u>	\$ 1,152,864
19	Stockholders' equity			
20	Common stock, no-par, 25,000 shares outstanding (8)		3,500,000	
21	Retained earnings (9)		<u>18,929,600</u>	<u>22,429,600</u>
22	Total			<u>\$23,582,464</u>
23				
24	Notes:			
25	Beginning balances are used as the starting point for most of the following computations:			
26	(1) \$1,711,000 + \$38,000,000 revenues – \$38,083,000 receipts (Exhibit 6-6) = \$1,628,000			
27	(2) From Schedule 6B, p. 195			
28	(3) From beginning balance sheet, p. 207			
29	(4) \$22,000,000 + \$758,000 purchases = \$22,758,000			
30	(5) \$6,900,000 + \$1,020,000 + \$603,000 depreciation from Schedule 5, p. 194			
31	(6) \$904,000 + \$9,950,000 (Schedule 3B) – \$9,975,536 (Exhibit 6-6) = \$878,464			
32	There are no other current liabilities. Cash flows for payroll, manufacturing overhead and nonmanufacturing costs totaling \$25,077,000 on the cash budget (Exhibit 6-6) consists of direct manufacturing labor costs of \$6,000,000 from Schedule 4 + cash manufacturing overhead costs of \$10,377,000 (\$12,000,000 – depreciation of \$1,623,000) from Schedule 5 + cash nonmanufacturing costs of \$8,700,000 from Schedule 8.			
33	(7) \$325,000 + \$1,874,400 current year – \$1,925,000 payment = \$274,400.			
34	(8) From beginning balance sheet.			
35	(9) \$16,118,000 + \$2,811,600 net income per Exhibit 6-7 = \$18,929,600			

Sensitivity Analysis and Cash Flows

Exhibit 6-4 (p. 197) shows how differing assumptions about selling prices of coffee tables and direct material prices led to differing amounts for budgeted operating income for Stylistic Furniture. A key use of sensitivity analysis is to budget cash flow. Exhibit 6-9 outlines the short-term borrowing implications of the two combinations examined in Exhibit 6-4. Scenario 1, with the lower selling prices per table (\$582 for the Casual table and \$776 for the Deluxe table), requires \$2,352,000 of short-term borrowing in quarter 1 that cannot be fully repaid as of December 31, 2012. Scenario 2, with the 5% higher direct material costs, requires \$2,250,000 borrowing by Stylistic Furniture that also cannot be repaid by December 31, 2012. Sensitivity analysis helps managers anticipate such outcomes and take steps to minimize the effects of expected reductions in cash flows from operations.

Exhibit 6-9

Sensitivity Analysis: Effects of Key Budget Assumptions in Exhibit 6-4 on 2012 Short-Term Borrowing for Stylistic Furniture

	Home	Insert	Page Layout	Formulas	Data	Review	View				
	A	B	C	D	E	F	G	H	I	J	
1				Direct Material			Short-Term Borrowing and Repayment by Quarter				
2		Selling Price		Purchase Costs		Budgeted	Quarters				
3	Scenario	Casual	Deluxe	Red Oak	Granite	Operating Income	1	2	3	4	
4	1	\$582	\$776	\$7.00	\$10.00	\$3,794,100	\$2,352,000	(\$511,000)	(\$ 969,000)	(\$ 30,000)	
5	2	\$600	\$800	7.35	10.50	4,483,800	2,250,000	(651,000)	(1,134,000)	(149,000)	

Terms to Learn

The chapter and the Glossary at the end of the book contain definitions of the following important terms:

activity-based budgeting (ABB) (p. 193)	financial budget (p. 189)	pro forma statements (p. 185)
budgetary slack (p. 201)	financial planning models (p. 197)	profit center (p. 199)
cash budget (p. 207)	investment center (p. 199)	responsibility accounting (p. 199)
continuous budget (p. 188)	kaizen budgeting (p. 203)	responsibility center (p. 199)
controllability (p. 200)	master budget (p. 185)	revenue center (p. 199)
controllable cost (p. 200)	operating budget (p. 189)	rolling budget (p. 188)
cost center (p. 199)	organization structure (p. 199)	

Assignment Material

Questions



- 6-1** What are the four elements of the budgeting cycle?
- 6-2** Define master budget.
- 6-3** "Strategy, plans, and budgets are unrelated to one another." Do you agree? Explain.
- 6-4** "Budgeted performance is a better criterion than past performance for judging managers." Do you agree? Explain.
- 6-5** "Production managers and marketing managers are like oil and water. They just don't mix." How can a budget assist in reducing battles between these two areas?
- 6-6** "Budgets meet the cost-benefit test. They force managers to act differently." Do you agree? Explain.
- 6-7** Define rolling budget. Give an example.
- 6-8** Outline the steps in preparing an operating budget.
- 6-9** "The sales forecast is the cornerstone for budgeting." Why?
- 6-10** How can sensitivity analysis be used to increase the benefits of budgeting?
- 6-11** Define kaizen budgeting.
- 6-12** Describe how nonoutput-based cost drivers can be incorporated into budgeting.
- 6-13** Explain how the choice of the type of responsibility center (cost, revenue, profit, or investment) affects behavior.
- 6-14** What are some additional considerations that arise when budgeting in multinational companies?
- 6-15** "Cash budgets must be prepared before the operating income budget." Do you agree? Explain.

Exercises



6-16 Sales budget, service setting. In 2011, Rouse & Sons, a small environmental-testing firm, performed 12,200 radon tests for \$290 each and 16,400 lead tests for \$240 each. Because newer homes are being built with lead-free pipes, lead-testing volume is expected to decrease by 10% next year. However, awareness of radon-related health hazards is expected to result in a 6% increase in radon-test volume each year in the near future. Jim Rouse feels that if he lowers his price for lead testing to \$230 per test, he will have to face only a 7% decline in lead-test sales in 2012.

- Prepare a 2012 sales budget for Rouse & Sons assuming that Rouse holds prices at 2011 levels.
- Prepare a 2012 sales budget for Rouse & Sons assuming that Rouse lowers the price of a lead test to \$230. Should Rouse lower the price of a lead test in 2012 if its goal is to maximize sales revenue?

Required

6-17 Sales and production budget. The Mendez Company expects sales in 2012 of 200,000 units of serving trays. Mendez's beginning inventory for 2012 is 15,000 trays and its target ending inventory is 25,000 trays. Compute the number of trays budgeted for production in 2012.

6-18 Direct material budget. Inglenook Co. produces wine. The company expects to produce 2,500,000 two-liter bottles of Chablis in 2012. Inglenook purchases empty glass bottles from an outside vendor. Its target ending inventory of such bottles is 80,000; its beginning inventory is 50,000. For simplicity, ignore breakage. Compute the number of bottles to be purchased in 2012.

6-19 Budgeting material purchases. The Mahoney Company has prepared a sales budget of 45,000 finished units for a three-month period. The company has an inventory of 16,000 units of finished goods on hand at December 31 and has a target finished goods inventory of 18,000 units at the end of the succeeding quarter.

It takes three gallons of direct materials to make one unit of finished product. The company has an inventory of 60,000 gallons of direct materials at December 31 and has a target ending inventory of 50,000 gallons at the end of the succeeding quarter. How many gallons of direct materials should be purchased during the three months ending March 31?

6-20 Revenues and production budget. Purity, Inc., bottles and distributes mineral water from the company's natural springs in northern Oregon. Purity markets two products: twelve-ounce disposable plastic bottles and four-gallon reusable plastic containers.

Required

- For 2012, Purity marketing managers project monthly sales of 400,000 twelve-ounce bottles and 100,000 four-gallon containers. Average selling prices are estimated at \$0.25 per twelve-ounce bottle and \$1.50 per four-gallon container. Prepare a revenues budget for Purity, Inc., for the year ending December 31, 2012.
- Purity begins 2012 with 900,000 twelve-ounce bottles in inventory. The vice president of operations requests that twelve-ounce bottles ending inventory on December 31, 2012, be no less than 600,000 bottles. Based on sales projections as budgeted previously, what is the minimum number of twelve-ounce bottles Purity must produce during 2012?
- The VP of operations requests that ending inventory of four-gallon containers on December 31, 2012, be 200,000 units. If the production budget calls for Purity to produce 1,300,000 four-gallon containers during 2012, what is the beginning inventory of four-gallon containers on January 1, 2012?

6-21 Budgeting; direct material usage, manufacturing cost and gross margin. Xerxes Manufacturing Company manufactures blue rugs, using wool and dye as direct materials. One rug is budgeted to use 36 skeins of wool at a cost of \$2 per skein and 0.8 gallons of dye at a cost of \$6 per gallon. All other materials are indirect. At the beginning of the year Xerxes has an inventory of 458,000 skeins of wool at a cost of \$961,800 and 4,000 gallons of dye at a cost of \$23,680. Target ending inventory of wool and dye is zero. Xerxes uses the FIFO inventory cost flow method.

Xerxes blue rugs are very popular and demand is high, but because of capacity constraints the firm will produce only 200,000 blue rugs per year. The budgeted selling price is \$2,000 each. There are no rugs in beginning inventory. Target ending inventory of rugs is also zero.

Xerxes makes rugs by hand, but uses a machine to dye the wool. Thus, overhead costs are accumulated in two cost pools—one for weaving and the other for dyeing. Weaving overhead is allocated to products based on direct manufacturing labor-hours (DMLH). Dyeing overhead is allocated to products based on machine-hours (MH).

There is no direct manufacturing labor cost for dyeing. Xerxes budgets 62 direct manufacturing labor-hours to weave a rug at a budgeted rate of \$13 per hour. It budgets 0.2 machine-hours to dye each skein in the dyeing process.

The following table presents the budgeted overhead costs for the dyeing and weaving cost pools:

	Dyeing (based on 1,440,000 MH)	Weaving (based on 12,400,000 DMLH)
Variable costs		
Indirect materials	\$ 0	\$15,400,000
Maintenance	6,560,000	5,540,000
Utilities	7,550,000	2,890,000
Fixed costs		
Indirect labor	347,000	1,700,000
Depreciation	2,100,000	274,000
Other	723,000	5,816,000
Total budgeted costs	<u>\$17,280,000</u>	<u>\$31,620,000</u>

Required

- Prepare a direct material usage budget in both units and dollars.

2. Calculate the budgeted overhead allocation rates for weaving and dyeing.
3. Calculate the budgeted unit cost of a blue rug for the year.
4. Prepare a revenue budget for blue rugs for the year, assuming Xerxes sells (a) 200,000 or (b) 185,000 blue rugs (that is, at two different sales levels).
5. Calculate the budgeted cost of goods sold for blue rugs under each sales assumption.
6. Find the budgeted gross margin for blue rugs under each sales assumption.

6-22 Revenues, production, and purchases budgets. The Suzuki Co. in Japan has a division that manufactures two-wheel motorcycles. Its budgeted sales for Model G in 2013 is 900,000 units. Suzuki’s target ending inventory is 80,000 units, and its beginning inventory is 100,000 units. The company’s budgeted selling price to its distributors and dealers is 400,000 yen (¥) per motorcycle.

Suzuki buys all its wheels from an outside supplier. No defective wheels are accepted. (Suzuki’s needs for extra wheels for replacement parts are ordered by a separate division of the company.) The company’s target ending inventory is 60,000 wheels, and its beginning inventory is 50,000 wheels. The budgeted purchase price is 16,000 yen (¥) per wheel.

1. Compute the budgeted revenues in yen.
2. Compute the number of motorcycles to be produced.
3. Compute the budgeted purchases of wheels in units and in yen.

Required

6-23 Budgets for production and direct manufacturing labor. (CMA, adapted) Roletter Company makes and sells artistic frames for pictures of weddings, graduations, and other special events. Bob Anderson, the controller, is responsible for preparing Roletter’s master budget and has accumulated the following information for 2013:

	2013				
	January	February	March	April	May
Estimated sales in units	10,000	12,000	8,000	9,000	9,000
Selling price	\$54.00	\$51.50	\$51.50	\$51.50	\$51.50
Direct manufacturing labor-hours per unit	2.0	2.0	1.5	1.5	1.5
Wage per direct manufacturing labor-hour	\$10.00	\$10.00	\$10.00	\$11.00	\$11.00

In addition to wages, direct manufacturing labor-related costs include pension contributions of \$0.50 per hour, worker’s compensation insurance of \$0.15 per hour, employee medical insurance of \$0.40 per hour, and Social Security taxes. Assume that as of January 1, 2013, the Social Security tax rates are 7.5% for employers and 7.5% for employees. The cost of employee benefits paid by Roletter on its employees is treated as a direct manufacturing labor cost.

Roletter has a labor contract that calls for a wage increase to \$11 per hour on April 1, 2013. New labor-saving machinery has been installed and will be fully operational by March 1, 2013. Roletter expects to have 16,000 frames on hand at December 31, 2012, and it has a policy of carrying an end-of-month inventory of 100% of the following month’s sales plus 50% of the second following month’s sales.

Prepare a production budget and a direct manufacturing labor budget for Roletter Company by month and for the first quarter of 2013. Both budgets may be combined in one schedule. The direct manufacturing labor budget should include labor-hours, and show the details for each labor cost category.

Required

6-24 Activity-based budgeting. The Chelsea store of Family Supermarket (FS), a chain of small neighborhood grocery stores, is preparing its activity-based budget for January 2011. FS has three product categories: soft drinks, fresh produce, and packaged food. The following table shows the four activities that consume indirect resources at the Chelsea store, the cost drivers and their rates, and the cost-driver amount budgeted to be consumed by each activity in January 2011.

 Home Insert Page Layout Formulas Data Review View						
	A	B	C	D	E	F
1			January 2011	January 2011 Budgeted		
2			Budgeted	Amount of Cost Driver Used		
3	Activity	Cost Driver	Cost-Driver Rate	Soft Drinks	Fresh Produce	Packaged Food
4	Ordering	Number of purchase orders	\$90	14	24	14
5	Delivery	Number of deliveries	\$82	12	62	19
6	Shelf stocking	Hours of stocking time	\$21	16	172	94
7	Customer support	Number of items sold	\$ 0.18	4,600	34,200	10,750

Required

1. What is the total budgeted indirect cost at the Chelsea store in January 2011? What is the total budgeted cost of each activity at the Chelsea store for January 2011? What is the budgeted indirect cost of each product category for January 2011?
2. Which product category has the largest fraction of total budgeted indirect costs?
3. Given your answer in requirement 2, what advantage does FS gain by using an activity-based approach to budgeting over, say, allocating indirect costs to products based on cost of goods sold?

6-25 Kaizen approach to activity-based budgeting (continuation of 6-24). Family Supermarkets (FS) has a kaizen (continuous improvement) approach to budgeting monthly activity costs for each month of 2011. Each successive month, the budgeted cost-driver rate decreases by 0.4% relative to the preceding month. So, for example, February's budgeted cost-driver rate is 0.996 times January's budgeted cost-driver rate, and March's budgeted cost-driver rate is 0.996 times the budgeted February 2011 rate. FS assumes that the budgeted amount of cost-driver usage remains the same each month.

Required

1. What is the total budgeted cost for each activity and the total budgeted indirect cost for March 2011?
2. What are the benefits of using a kaizen approach to budgeting? What are the limitations of this approach, and how might FS management overcome them?

6-26 Responsibility and controllability. Consider each of the following independent situations for Anderson Forklifts. Anderson manufactures and sells forklifts. The company also contracts to service both its own and other brands of forklifts. Anderson has a manufacturing plant, a supply warehouse that supplies both the manufacturing plant and the service technicians (who often need parts to repair forklifts) and 10 service vans. The service technicians drive to customer sites to service the forklifts. Anderson owns the vans, pays for the gas, and supplies forklift parts, but the technicians own their own tools.

1. In the manufacturing plant the production manager is not happy with the engines that the purchasing manager has been purchasing. In May the production manager stops requesting engines from the supply warehouse, and starts purchasing them directly from a different engine manufacturer. Actual materials costs in May are higher than budgeted.
2. Overhead costs in the manufacturing plant for June are much higher than budgeted. Investigation reveals a utility rate hike in effect that was not figured into the budget.
3. Gasoline costs for each van are budgeted based on the service area of the van and the amount of driving expected for the month. The driver of van 3 routinely has monthly gasoline costs exceeding the budget for van 3. After investigating, the service manager finds that the driver has been driving the van for personal use.
4. At Bigstore Warehouse, one of Anderson's forklift service customers, the service people are only called in for emergencies and not for routine maintenance. Thus, the materials and labor costs for these service calls exceeds the monthly budgeted costs for a contract customer.
5. Anderson's service technicians are paid an hourly wage, with overtime pay if they exceed 40 hours per week, excluding driving time. Fred Snert, one of the technicians, frequently exceeds 40 hours per week. Service customers are happy with Fred's work, but the service manager talks to him constantly about working more quickly. Fred's overtime causes the actual costs of service to exceed the budget almost every month.
6. The cost of gasoline has increased by 50% this year, which caused the actual gasoline costs to greatly exceed the budgeted costs for the service vans.

Required

For each situation described, determine where (that is, with whom) (a) responsibility and (b) controllability lie. Suggest what might be done to solve the problem or to improve the situation.

6-27 Cash flow analysis, sensitivity analysis. Game Guys is a retail store selling video games. Sales are uniform for most of the year, but pick up in June and December, both because new releases come out and because games are purchased in anticipation of summer or winter holidays. Game Guys also sells and repairs game systems. The forecast of sales and service revenue for the second quarter of 2012 is as follows:

**Sales and Service Revenue Budget
Second Quarter, 2012**

Month	Expected Sales Revenue	Expected Service Revenue	Total Revenue
April	\$ 5,500	\$1,000	\$ 6,500
May	6,200	1,400	7,600
June	9,700	2,600	12,300
Total	\$21,400	\$5,000	\$26,400

Almost all the service revenue is paid for by bank credit card, so Game Guys budgets this as 100% bank card revenue. The bank cards charge an average fee of 3% of the total. Half of the sales revenue is also paid for by bank credit card, for which the fee is also 3% on average. About 10% of the sales are paid in cash, and the rest (the remaining 40%) are carried on a store account. Although the store tries to give store credit only

to the best customers, it still averages about 2% for uncollectible accounts; 90% of store accounts are paid in the month following the purchase, and 8% are paid two months after purchase.

1. Calculate the cash that Game Guys expects to collect in May and in June of 2012. Show calculations for each month.
2. Game Guys has budgeted expenditures for May of \$4,350 for the purchase of games and game systems, \$1,400 for rent and utilities and other costs, and \$1,000 in wages for the two part time employees.
 - a. Given your answer to requirement 1, will Game Guys be able to cover its payments for May?
 - b. The projections for May are a budget. Assume (independently for each situation) that May revenues might also be 5% less and 10% less, and that costs might be 8% higher. Under each of those three scenarios show the total net cash for May and the amount Game Guys would have to borrow if cash receipts are less than cash payments. Assume the beginning cash balance for May is \$100.
3. Suppose the costs for May are as described in requirement 2, but the expected cash receipts for May are \$6,200 and beginning cash balance is \$100. Game Guys has the opportunity to purchase the games and game systems on account in May, but the supplier offers the company credit terms of 2/10 net 30, which means if Game Guys pays within 10 days (in May) it will get a 2% discount on the price of the merchandise. Game Guys can borrow money at a rate of 24%. Should Game Guys take the purchase discount?

Required

Problems



6-28 Budget schedules for a manufacturer. Logo Specialties manufactures, among other things, woolen blankets for the athletic teams of the two local high schools. The company sews the blankets from fabric and sews on a logo patch purchased from the licensed logo store site. The teams are as follows:

- Knights, with red blankets and the Knights logo
- Raiders, with black blankets and the Raider logo

Also, the black blankets are slightly larger than the red blankets.

The budgeted direct-cost inputs for each product in 2012 are as follows:

	Knights Blanket	Raiders Blanket
Red wool fabric	3 yards	0
Black wool fabric	0	3.3 yards
Knight logo patches	1	0
Raider logo patches	0	1
Direct manufacturing labor	1.5 hours	2 hours

Unit data pertaining to the direct materials for March 2012 are as follows:

Actual Beginning Direct Materials Inventory (3/1/2012)

	Knights Blanket	Raiders Blanket
Red wool fabric	30 yards	0
Black wool fabric	0	10 yards
Knight logo patches	40	0
Raider logo patches	0	55

Target Ending Direct Materials Inventory (3/31/2012)

	Knights Blanket	Raiders Blanket
Red wool fabric	20 yards	0
Black wool fabric	0	20 yards
Knight logo patches	20	0
Raider logo patches	0	20

Unit cost data for direct-cost inputs pertaining to February 2012 and March 2012 are as follows:

	February 2012 (actual)	March 2012 (budgeted)
Red wool fabric (per yard)	\$8	\$9
Black wool fabric (per yard)	10	9
Knight logo patches (per patch)	6	6
Raider logo patches (per patch)	5	7
Manufacturing labor cost per hour	25	26

Manufacturing overhead (both variable and fixed) is allocated to each blanket on the basis of budgeted direct manufacturing labor-hours per blanket. The budgeted variable manufacturing overhead rate for March 2012 is \$15 per direct manufacturing labor-hour. The budgeted fixed manufacturing overhead for March 2012 is \$9,200. Both variable and fixed manufacturing overhead costs are allocated to each unit of finished goods.

Data relating to finished goods inventory for March 2012 are as follows:

	Knights Blankets	Raiders Blankets
Beginning inventory in units	10	15
Beginning inventory in dollars (cost)	\$1,210	\$2,235
Target ending inventory in units	20	25

Budgeted sales for March 2012 are 120 units of the Knights blankets and 180 units of the Raiders blankets. The budgeted selling prices per unit in March 2012 are \$150 for the Knights blankets and \$175 for the Raiders blankets. Assume the following in your answer:

- Work-in-process inventories are negligible and ignored.
- Direct materials inventory and finished goods inventory are costed using the FIFO method.
- Unit costs of direct materials purchased and finished goods are constant in March 2012.

Required

1. Prepare the following budgets for March 2012:
 - a. Revenues budget
 - b. Production budget in units
 - c. Direct material usage budget and direct material purchases budget
 - d. Direct manufacturing labor budget
 - e. Manufacturing overhead budget
 - f. Ending inventories budget (direct materials and finished goods)
 - g. Cost of goods sold budget
2. Suppose Logo Specialties decides to incorporate continuous improvement into its budgeting process. Describe two areas where it could incorporate continuous improvement into the budget schedules in requirement 1.

6-29 Budgeted costs; kaizen improvements. DryPool T-Shirt Factory manufactures plain white and solid colored T-shirts. Inputs include the following:

	Price	Quantity	Cost per unit of output
Fabric	\$ 6 per yard	1 yard per unit	\$6 per unit
Labor	\$12 per DMLH	0.25 DMLH per unit	\$3 per unit

Additionally, the colored T-shirts require 3 ounces of dye per shirt at a cost of \$0.20 per ounce. The shirts sell for \$15 each for white and \$20 each for colors. The company expects to sell 12,000 white T-shirts and 60,000 colored T-shirts uniformly over the year.

DryPool has the opportunity to switch from using the dye it currently uses to using an environmentally friendly dye that costs \$1.00 per ounce. The company would still need three ounces of dye per shirt. DryPool is reluctant to change because of the increase in costs (and decrease in profit) but the Environmental Protection Agency has threatened to fine them \$102,000 if they continue to use the harmful but less expensive dye.

Required

1. Given the preceding information, would DryPool be better off financially by switching to the environmentally friendly dye? (Assume all other costs would remain the same.)
2. Assume DryPool chooses to be environmentally responsible regardless of cost, and it switches to the new dye. The production manager suggests trying Kaizen costing. If DryPool can reduce fabric and labor costs each by 1% per month, how close will it be at the end of 12 months to the gross profit it would have earned before switching to the more expensive dye? (Round to the nearest dollar for calculating cost reductions)
3. Refer to requirement 2. How could the reduction in material and labor costs be accomplished? Are there any problems with this plan?

6-30 Revenue and production budgets. (CPA, adapted) The Scarborough Corporation manufactures and sells two products: Thingone and Thingtwo. In July 2011, Scarborough's budget department gathered the following data to prepare budgets for 2012:

2012 Projected Sales

Product	Units	Price
Thingone	60,000	\$165
Thingtwo	40,000	\$250

2012 Inventories in Units

Product	Expected Target	
	January 1, 2012	December 31, 2012
Thingone	20,000	25,000
Thingtwo	8,000	9,000

The following direct materials are used in the two products:

Direct Material	Amount Used per Unit		
	Unit	Thingone	Thingtwo
A	pound	4	5
B	pound	2	3
C	each	0	1

Projected data for 2012 with respect to direct materials are as follows:

Direct Material	Anticipated Purchase Price	Expected Inventories January 1, 2012	Target Inventories December 31, 2012
A	\$12	32,000 lb.	36,000 lb.
B	5	29,000 lb.	32,000 lb.
C	3	6,000 units	7,000 units

Projected direct manufacturing labor requirements and rates for 2012 are as follows:

Product	Hours per Unit	Rate per Hour
Thingone	2	\$12
Thingtwo	3	16

Manufacturing overhead is allocated at the rate of \$20 per direct manufacturing labor-hour.

Based on the preceding projections and budget requirements for Thingone and Thingtwo, prepare the following budgets for 2012:

Required

1. Revenues budget (in dollars)
2. Production budget (in units)
3. Direct material purchases budget (in quantities)
4. Direct material purchases budget (in dollars)
5. Direct manufacturing labor budget (in dollars)
6. Budgeted finished goods inventory at December 31, 2012 (in dollars)

6-31 Budgeted income statement. (CMA, adapted) Easecom Company is a manufacturer of videoconferencing products. Regular units are manufactured to meet marketing projections, and specialized units are made after an order is received. Maintaining the videoconferencing equipment is an important area of customer satisfaction. With the recent downturn in the computer industry, the videoconferencing equipment segment has suffered, leading to a decline in Easecom's financial performance. The following income statement shows results for 2011:

Easecom Company Income Statement For the Year Ended December 31, 2011 (in thousands)		
Revenues:		
Equipment	\$6,000	
Maintenance contracts	<u>1,800</u>	
Total revenues		\$7,800
Cost of goods sold		<u>4,600</u>
Gross margin		3,200
Operating costs		
Marketing	600	
Distribution	150	
Customer maintenance	1,000	
Administration	<u>900</u>	
Total operating costs		<u>2,650</u>
Operating income		<u>\$ 550</u>

Easecom's management team is in the process of preparing the 2012 budget and is studying the following information:

1. Selling prices of equipment are expected to increase by 10% as the economic recovery begins. The selling price of each maintenance contract is expected to remain unchanged from 2011.
2. Equipment sales in units are expected to increase by 6%, with a corresponding 6% growth in units of maintenance contracts.
3. Cost of each unit sold is expected to increase by 3% to pay for the necessary technology and quality improvements.
4. Marketing costs are expected to increase by \$250,000, but administration costs are expected to remain at 2011 levels.
5. Distribution costs vary in proportion to the number of units of equipment sold.
6. Two maintenance technicians are to be hired at a total cost of \$130,000, which covers wages and related travel costs. The objective is to improve customer service and shorten response time.
7. There is no beginning or ending inventory of equipment.

Required

Prepare a budgeted income statement for the year ending December 31, 2012.

6-32 Responsibility in a restaurant. Barney Briggs owns a restaurant franchise that is part of a chain of "southern homestyle" restaurants. One of the chain's popular breakfast items is biscuits and gravy. Central Warehouse makes and freezes the biscuit dough, which is then sold to the franchise stores; there, it is thawed and baked in the individual stores by the cook. Each franchise also has a purchasing agent who orders the biscuits (and other items) based on expected demand. In March, 2012, one of the freezers in Central Warehouse breaks down and biscuit production is reduced by 25% for three days. During those three days, Barney's franchise runs out of biscuits but demand does not slow down. Barney's franchise cook, Janet Tribble, sends one of the kitchen helpers to the local grocery store to buy refrigerated ready-to-bake biscuits. Although the customers are kept happy, the refrigerated biscuits cost Barney's franchise three times the cost of the Central Warehouse frozen biscuits, and the franchise loses money on this item for those three days. Barney is angry with the purchasing agent for not ordering enough biscuits to avoid running out of stock, and with Janet for spending too much money on the replacement biscuits.

Required

Who is responsible for the cost of the biscuits? At what level is the cost controllable? Do you agree that Barney should be angry with the purchasing agent? With Janet? Why or why not?

6-33 Comprehensive problem with ABC costing. Pet Luggage Company makes two pet carriers, the Cat-allac and the Dog-eriffic. They are both made of plastic with metal doors, but the Cat-allac is smaller. Information for the two products for the month of April is given in the following tables:

Input Prices

Direct materials		
Plastic	\$ 4 per pound	
Metal	\$ 3 per pound	
Direct manufacturing labor	\$14 per direct manufacturing labor-hour	

Input Quantities per Unit of Output

	Cat-allac	Dog-eriffic
Direct materials		
Plastic	3 pounds	5 pounds
Metal	0.5 pounds	1 pound
Direct manufacturing labor-hours (DMLH)	3 hours	5 hours
Machine-hours (MH)	13 MH	20 MH

Inventory Information, Direct Materials

	Plastic	Metal
Beginning inventory	230 pounds	70 pounds
Target ending inventory	400 pounds	65 pounds
Cost of beginning inventory	\$874	\$224

Pet Luggage accounts for direct materials using a FIFO cost flow assumption.

Sales and Inventory Information, Finished Goods

	Cat-allac	Dog-eriffic
Expected sales in units	580	240
Selling price	\$ 190	\$ 275
Target ending inventory in units	45	25
Beginning inventory in units	25	40
Beginning inventory in dollars	\$2,500	\$7,440

Pet Luggage uses a FIFO cost flow assumption for finished goods inventory.

Pet Luggage uses an activity-based costing system and classifies overhead into three activity pools: Setup, Processing, and Inspection. Activity rates for these activities are \$130 per setup-hour, \$5 per machine-hour, and \$20 per inspection-hour, respectively. Other information follows:

Cost Driver Information	Cat-allac	Dog-eriffic
Number of units per batch	25	13
Setup time per batch	1.25 hours	2.00 hours
Inspection time per batch	0.5 hour	0.6 hour

Nonmanufacturing fixed costs for March equal \$32,000, of which half are salaries. Salaries are expected to increase 5% in April. The only variable nonmanufacturing cost is sales commission, equal to 1% of sales revenue.

Prepare the following for April:

Required

1. Revenues budget
2. Production budget in units
3. Direct material usage budget and direct material purchases budget
4. Direct manufacturing labor cost budget
5. Manufacturing overhead cost budgets for each of the three activities
6. Budgeted unit cost of ending finished goods inventory and ending inventories budget
7. Cost of goods sold budget
8. Nonmanufacturing costs budget
9. Budgeted income statement (ignore income taxes)

6-34 Cash budget (continuation of 6-33). Refer to the information in Problem 6-33.

Assume the following: Pet Luggage (PL) does not make any sales on credit. PL sells only to the public, and accepts cash and credit cards; 90% of its sales are to customers using credit cards, for which PL gets the cash right away less a 2% transaction fee.

Purchases of materials are on account. PL pays for half the purchases in the period of the purchase, and the other half in the following period. At the end of March, PL owes suppliers \$8,400.

PL plans to replace a machine in April at a net cash cost of \$13,800.

Labor, other manufacturing costs, and nonmanufacturing costs are paid in cash in the month incurred except of course, depreciation, which is not a cash flow. \$22,500 of the manufacturing cost and \$12,500 of the nonmanufacturing cost for April is depreciation.

PL currently has a \$2,600 loan at an annual interest rate of 24%. The interest is paid at the end of each month. If PL has more than \$10,000 cash at the end of April it will pay back the loan. PL owes \$5,400 in income taxes that need to be remitted in April. PL has cash of \$5,200 on hand at the end of March.

Prepare a cash budget for April for Pet Luggage.

Required

6-35 Comprehensive operating budget, budgeted balance sheet. Slopes, Inc., manufactures and sells snowboards. Slopes manufactures a single model, the Pipex. In the summer of 2011, Slopes' management accountant gathered the following data to prepare budgets for 2012:

Materials and Labor Requirements

Direct materials	
Wood	5 board feet (b.f.) per snowboard
Fiberglass	6 yards per snowboard
Direct manufacturing labor	5 hours per snowboard

Slopes' CEO expects to sell 1,000 snowboards during 2012 at an estimated retail price of \$450 per board. Further, the CEO expects 2012 beginning inventory of 100 snowboards and would like to end 2012 with 200 snowboards in stock.

Direct Materials Inventories

	Beginning Inventory 1/1/2012	Ending Inventory 12/31/2012
Wood	2,000 b.f.	1,500 b.f.
Fiberglass	1,000 yards	2,000 yards

Variable manufacturing overhead is \$7 per direct manufacturing labor-hour. There are also \$66,000 in fixed manufacturing overhead costs budgeted for 2012. Slopes combines both variable and fixed manufacturing overhead into a single rate based on direct manufacturing labor-hours. Variable marketing

costs are allocated at the rate of \$250 per sales visit. The marketing plan calls for 30 sales visits during 2012. Finally, there are \$30,000 in fixed nonmanufacturing costs budgeted for 2012.

Other data include the following:

	2011 Unit Price	2012 Unit Price
Wood	\$28.00 per b.f.	\$30.00 per b.f.
Fiberglass	\$ 4.80 per yard	\$ 5.00 per yard
Direct manufacturing labor	\$24.00 per hour	\$25.00 per hour

The inventoriable unit cost for ending finished goods inventory on December 31, 2011, is \$374.80. Assume Slopes uses a FIFO inventory method for both direct materials and finished goods. Ignore work in process in your calculations.

Budgeted balances at December 31, 2012, in the selected accounts are as follows:

Cash	\$ 10,000
Property, plant, and equipment (net)	850,000
Current liabilities	17,000
Long-term liabilities	178,000
Stockholders' equity	800,000

Required

1. Prepare the 2012 revenues budget (in dollars).
2. Prepare the 2012 production budget (in units).
3. Prepare the direct material usage and purchases budgets for 2012.
4. Prepare a direct manufacturing labor budget for 2012.
5. Prepare a manufacturing overhead budget for 2012.
6. What is the budgeted manufacturing overhead rate for 2012?
7. What is the budgeted manufacturing overhead cost per output unit in 2012?
8. Calculate the cost of a snowboard manufactured in 2012.
9. Prepare an ending inventory budget for both direct materials and finished goods for 2012.
10. Prepare a cost of goods sold budget for 2012.
11. Prepare the budgeted income statement for Slopes, Inc., for the year ending December 31, 2012.
12. Prepare the budgeted balance sheet for Slopes, Inc., as of December 31, 2012.

6-36 Cash budgeting. Retail outlets purchase snowboards from Slopes, Inc., throughout the year. However, in anticipation of late summer and early fall purchases, outlets ramp up inventories from May through August. Outlets are billed when boards are ordered. Invoices are payable within 60 days. From past experience, Slopes' accountant projects 20% of invoices will be paid in the month invoiced, 50% will be paid in the following month, and 30% of invoices will be paid two months after the month of invoice. The average selling price per snowboard is \$450.

To meet demand, Slopes increases production from April through July, because the snowboards are produced a month prior to their projected sale. Direct materials are purchased in the month of production and are paid for during the following month (terms are payment in full within 30 days of the invoice date). During this period there is no production for inventory, and no materials are purchased for inventory.

Direct manufacturing labor and manufacturing overhead are paid monthly. Variable manufacturing overhead is incurred at the rate of \$7 per direct manufacturing labor-hour. Variable marketing costs are driven by the number of sales visits. However, there are no sales visits during the months studied. Slopes, Inc., also incurs fixed manufacturing overhead costs of \$5,500 per month and fixed nonmanufacturing overhead costs of \$2,500 per month.

Projected Sales	
May 80 units	August 100 units
June 120 units	September 60 units
July 200 units	October 40 units

Direct Materials and Direct Manufacturing Labor Utilization and Cost

	Units per Board	Price per Unit	Unit
Wood	5	\$30	board feet
Fiberglass	6	5	yard
Direct manufacturing labor	5	25	hour

The beginning cash balance for July 1, 2012, is \$10,000. On October 1, 2011, Slopes had a cash crunch and borrowed \$30,000 on a 6% one-year note with interest payable monthly. The note is due October 1, 2012. Using the information provided, you will need to determine whether Slopes will be in a position to pay off this short-term debt on October 1, 2012.

1. Prepare a cash budget for the months of July through September 2012. Show supporting schedules for the calculation of receivables and payables.
2. Will Slopes be in a position to pay off the \$30,000 one-year note that is due on October 1, 2012? If not, what actions would you recommend to Slopes' management?
3. Suppose Slopes is interested in maintaining a minimum cash balance of \$10,000. Will the company be able to maintain such a balance during all three months analyzed? If not, suggest a suitable cash management strategy.

Required

6-37 Cash budgeting. On December 1, 2011, the Itami Wholesale Co. is attempting to project cash receipts and disbursements through January 31, 2012. On this latter date, a note will be payable in the amount of \$100,000. This amount was borrowed in September to carry the company through the seasonal peak in November and December.

Selected general ledger balances on December 1 are as follows:

Cash	\$ 88,000	
Inventory	65,200	
Accounts payable		136,000

Sales terms call for a 3% discount if payment is made within the first 10 days of the month after sale, with the balance due by the end of the month after sale. Experience has shown that 50% of the billings will be collected within the discount period, 30% by the end of the month after purchase, and 14% in the following month. The remaining 6% will be uncollectible. There are no cash sales.

The average selling price of the company's products is \$100 per unit. Actual and projected sales are as follows:

October actual	\$ 280,000
November actual	320,000
December estimated	330,000
January estimated	250,000
February estimated	240,000
Total estimated for year ending June 30, 2012	\$2,400,000

All purchases are payable within 15 days. Approximately 60% of the purchases in a month are paid that month, and the rest the following month. The average unit purchase cost is \$80. Target ending inventories are 500 units plus 10% of the next month's unit sales.

Total budgeted marketing, distribution, and customer-service costs for the year are \$600,000. Of this amount, \$120,000 are considered fixed (and include depreciation of \$30,000). The remainder varies with sales. Both fixed and variable marketing, distribution, and customer-service costs are paid as incurred.

Prepare a cash budget for December 2011 and January 2012. Supply supporting schedules for collections of receivables; payments for merchandise; and marketing, distribution, and customer-service costs.

Required

6-38 Comprehensive problem; ABC manufacturing, two products. Follette Inc. operates at capacity and makes plastic combs and hairbrushes. Although the combs and brushes are a matching set, they are sold individually and so the sales mix is not 1:1. Follette Inc. is planning its annual budget for fiscal year 2011. Information for 2011 follows:

Input Prices

Direct materials	
Plastic	\$ 0.20 per ounce
Bristles	\$ 0.50 per bunch
Direct manufacturing labor	\$12 per direct manufacturing labor-hour

Input Quantities per Unit of Output

	Combs	Brushes
Direct materials		
Plastic	5 ounces	8 ounces
Bristles	—	16 bunches
Direct manufacturing labor	0.05 hours	0.2 hours
Machine-hours (MH)	0.025 MH	0.1 MH

Inventory Information, Direct Materials

	Plastic	Bristles
Beginning inventory	1,600 ounces	1,820 bunches
Target ending inventory	1,766 ounces	2,272 bunches
Cost of beginning inventory	\$304	\$946

Folette Inc. accounts for direct materials using a FIFO cost flow.

Sales and Inventory Information, Finished Goods

	Combs	Brushes
Expected sales in units	12,000	14,000
Selling price	\$ 6	\$ 20
Target ending inventory in units	1,200	1,400
Beginning inventory in units	600	1,200
Beginning inventory in dollars	\$ 1,800	\$18,120

Folette Inc. uses a FIFO cost flow assumption for finished goods inventory.

Combs are manufactured in batches of 200, and brushes are manufactured in batches of 100. It takes 20 minutes to set up for a batch of combs, and one hour to set up for a batch of brushes.

Folette Inc. uses activity-based costing and has classified all overhead costs as shown in the following table:

Cost Type	Budgeted Variable	Budgeted Fixed	Cost Driver/Allocation Base
Manufacturing:			
Materials handling	\$11,490	\$15,000	Number of ounces of plastic used
Setup	6,830	11,100	Setup-hours
Processing	7,760	20,000	Machine-hours
Inspection	7,000	1,040	Number of units produced
Nonmanufacturing:			
Marketing	14,100	60,000	Sales revenue
Distribution	0	780	Number of deliveries

Delivery trucks transport units sold in delivery sizes of 1,000 combs or 1,000 brushes.

Required

Do the following for the year 2011:

- Prepare the revenues budget.
- Use the revenue budget to
 - find the budgeted allocation rate for marketing costs.
 - find the budgeted number of deliveries and allocation rate for distribution costs.
- Prepare the production budget in units.
- Use the production budget to
 - find the budgeted number of setups, setup-hours, and the allocation rate for setup costs.
 - find the budgeted total machine-hours and the allocation rate for processing costs.
 - find the budgeted total units produced and the allocation rate for inspection costs.
- Prepare the direct material usage budget and the direct material purchases budgets in both units and dollars; round to whole dollars.
- Use the direct material usage budget to find the budgeted allocation rate for materials handling costs.
- Prepare the direct manufacturing labor cost budget.
- Prepare the manufacturing overhead cost budget for materials handling, setup, and processing.
- Prepare the budgeted unit cost of ending finished goods inventory and ending inventories budget.

10. Prepare the cost of goods sold budget.
11. Prepare the nonmanufacturing overhead costs budget for marketing and distribution.
12. Prepare a budgeted income statement (ignore income taxes).

6-39 Budgeting and ethics. Delma Company manufactures a variety of products in a variety of departments, and evaluates departments and departmental managers by comparing actual cost and output relative to the budget. Departmental managers help create the budgets, and usually provide information about input quantities for materials, labor, and overhead costs.

Wert Mimble is the manager of the department that produces product Z. Wert has estimated these inputs for product Z:

Input	Budget Quantity per Unit of Output
Direct material	4 pounds
Direct manufacturing labor	15 minutes
Machine time	12 minutes

The department produces about 100 units of product Z each day. Wert's department always gets excellent evaluations, sometimes exceeding budgeted production quantities. Each 100 units of product Z uses, on average, about 24 hours of direct manufacturing labor (four people working six hours each), 395 pounds of material, and 19.75 machine-hours.

Top management of Delma Company has decided to implement budget standards that will challenge the workers in each department, and it has asked Wert to design more challenging input standards for product Z. Wert provides top management with the following input quantities:

Input	Budget Quantity per Unit of Output
Direct material	3.95 pounds
Direct manufacturing labor	14.5 minutes
Machine time	11.8 minutes

Discuss the following:

1. Are these standards challenging standards for the department that produces product Z?
2. Why do you suppose Wert picked these particular standards?
3. What steps can Delma Company's top management take to make sure Wert's standards really meet the goals of the firm?

Required

6-40 Human Aspects of Budgeting in a Service Firm. Jag Meerkat owns three upscale hair salons: Hair Suite I, II, and III. Each of the salons has a manager and 10 stylists who rent space in the salons as independent contractors and who pay a fee of 10% of each week's revenue to the salon as rent. In exchange they get to use the facility and utilities, but must bring their own equipment.

The manager of each salon schedules each customer appointment to last an hour, and then allows the stylist 10 minutes between appointments to clean up, rest, and prepare for the next appointment. The salons are open from 10 A.M. to 6 P.M., so each stylist can serve seven customers per day. Stylists each work five days a week on a staggered schedule, so the salon is open seven days a week. Everyone works on Saturdays, but some stylists have Sunday and Monday off, some have Tuesday and Wednesday off, and some have Thursday and Friday off.

Jag Meerkat knows that utility costs are rising. Jag wants to increase revenues to cover at least some part of rising utility costs, so Jag tells each of the managers to find a way to increase productivity in the salons so that the stylists will pay more to the salons. Jag does not want to increase the rental fee above 10% of revenue for fear the stylists will leave, and each salon has only 10 stations, so he feels each salon cannot hire more than 10 full-time stylists.

The manager of Hair Suite I attacks the problem by simply telling the stylists that, from now on, customers will be scheduled for 40 minute appointments and breaks will be five minutes. This will allow each stylist to add one more customer per day.

The manager of Hair Suite II asks the stylists on a voluntary basis to work one extra hour per day, from 10 A.M. to 7 P.M., to add an additional customer per stylist per day.

The manager of Hair Suite III sits down with the stylists and discusses the issue. After considering shortening the appointment and break times, or lengthening the hours of operation, one of the stylists says, "I know we rent stations in your store, but I am willing to share my station. You could hire an eleventh stylist, who will simply work at whatever station is vacant during our days off. Since we use our own equipment, this will not be a problem for me as long as there is a secure place I can leave my equipment on my days off." Most of the other stylists agree that this is a good solution.

Required

1. Which manager's style do you think is most effective? Why?
2. How do you think the stylists will react to the managers of salons I and II? What can they do to indicate their displeasure, assuming they are displeased?
3. In Hair Suite III, if the stylists did not want to share their stations with another party, how else could they find a way to increase revenues?
4. Refer again to the action that the manager of Hair Suite I has chosen. How does this relate to the concept of stretch targets?

Collaborative Learning Problem

6-41 Comprehensive budgeting problem; activity based costing, operating and financial budgets. Borkenstick makes a very popular undyed cloth sandal in one style, but in Regular and Deluxe. The Regular sandals have cloth soles and the Deluxe sandals have cloth covered wooden soles. Borkenstick is preparing its budget for June 2012, and has estimated sales based on past experience.

Other information for the month of June follows:

Input Prices

Direct materials		
Cloth	\$3.50 per yard	
Wood	\$5.00 per board foot	
Direct manufacturing labor	\$10 per direct manufacturing labor-hour	

Input Quantities per Unit of Output (per pair of sandals)

	Regular	Deluxe
Direct materials		
Cloth	1.3 yards	1.5 yards
Wood	0	2 b.f.
Direct manufacturing labor-hours (DMLH)	5 hours	7 hours
Setup-hours per batch	2 hours	3 hours

Inventory Information, Direct Materials

	Cloth	Wood
Beginning inventory	610 yards	800 b.f.
Target ending inventory	386 yards	295 b.f.
Cost of beginning inventory	\$2,146	\$4,040

Borkenstick accounts for direct materials using a FIFO cost flow assumption.

Sales and Inventory Information, Finished Goods

	Regular	Deluxe
Expected sales in units (pairs of sandals)	2,000	3,000
Selling price	\$ 80	\$ 130
Target ending inventory in units	400	600
Beginning inventory in units	250	650
Beginning inventory in dollars	\$15,500	\$61,750

Borkenstick uses a FIFO cost flow assumption for finished goods inventory.

All the sandals are made in batches of 50 pairs of sandals. Borkenstick incurs manufacturing overhead costs, marketing and general administration, and shipping costs. Besides materials and labor, manufacturing costs include setup, processing, and inspection costs. Borkenstick ships 40 pairs of sandals per shipment. Borkenstick uses activity-based costing and has classified all overhead costs for the month of June as shown in the following chart:

Cost type	Denominator Activity	Rate
Manufacturing:		
Setup	Setup-hours	\$12 per setup-hour
Processing	Direct manufacturing labor-hours	\$1.20 per DMLH
Inspection	Number of pairs of sandals	\$0.90 per pair
Nonmanufacturing:		
Marketing and general administration	Sales revenue	8%
Shipping	Number of shipments	\$10 per shipment

Required

1. Prepare each of the following for June:
 - a. Revenues budget
 - b. Production budget in units
 - c. Direct material usage budget and direct material purchases budget in both units and dollars; round to dollars
 - d. Direct manufacturing labor cost budget
 - e. Manufacturing overhead cost budgets for processing and setup activities
 - f. Budgeted unit cost of ending finished goods inventory and ending inventories budget
 - g. Cost of goods sold budget
 - h. Marketing and general administration costs budget
2. Borkenstick's balance sheet for May 31 follows. Use it and the following information to prepare a cash budget for Borkenstick for June. Round to dollars.
 - All sales are on account; 60% are collected in the month of the sale, 38% are collected the following month, and 2% are never collected and written off as bad debts.
 - All purchases of materials are on account. Borkenstick pays for 80% of purchases in the month of purchase and 20% in the following month.
 - All other costs are paid in the month incurred, including the declaration and payment of a \$10,000 cash dividend in June.
 - Borkenstick is making monthly interest payments of 0.5% (6% per year) on a \$100,000 long term loan.
 - Borkenstick plans to pay the \$7,200 of taxes owed as of May 31 in the month of June. Income tax expense for June is zero.
 - 30% of processing and setup costs, and 10% of marketing and general administration costs are depreciation.

**Borkenstick
Balance Sheet
as of May 31**

Assets		
Cash		\$ 6,290
Accounts receivable	\$216,000	
Less: Allowance for bad debts	10,800	205,200
Inventories		
Direct materials		6,186
Finished goods		77,250
Fixed assets	\$580,000	
Less: Accumulated depreciation	90,890	489,110
Total assets		\$784,036
Liabilities and Equity		
Accounts payable		\$ 10,400
Taxes payable		7,200
Interest payable		500
Long-term debt		100,000
Common stock		200,000
Retained earnings		465,936
Total liabilities and equity		\$784,036

3. Prepare a budgeted income statement for June and a budgeted balance sheet for Borkenstick as of June 30.