*Section I*

# Preparing to Operate the Business



The first section of the book covers those tasks that should be accomplished prior to the start of a business or as ongoing analysis after it has been founded. It accomplishes this objective in three chapters.

Chapter 1 covers the budgeting function. The issues addressed here, such as the format of a budget, its components, and how it should be compared to actual results, are critical to the overall management of a business, and should be firmly in place before the organization is created. The budgeting function must also be regularly monitored and controlled to ensure that actual results do not stray from the plan.

Chapter 2 covers investments in large-dollar items, which are known as capital items. It covers the steps to be followed in order to investigate the need for a capital item, compare it to other capital requests, and determine what should be purchased. This is a key factor not only in the beginning of a business, but also in the renewal of key assets over time, as they gradually wear out and require replacement.

Chapter 3 describes the basic controls that should be installed, not only to ensure that the probability of fraud is reduced, but also to verify that the company is not deviating from its planned course. The full range of controls are presented, including such areas as billings, payables, fixed assets, and inventory.

Chapter 1

# Budgeting for Operations

Operating budgets are used for planning, operating, and control functions. To improve your probability of success, you should engage in not only long-range but also operational budgeting/planning. The fulfillment of the planning process requires a complete set of marketing, product, capital, and financial plans as are described in this chapter.

## *Definition or Purpose of an Operating Budget*

An operating budget is a projected and, it is hoped, realistic number picture of income and cost objectives for a period.

Usually operating budgets are constructed for a year, by months. Some people construct five-year operating budgets with varying reporting periods. Such budgets are often constructed monthly for the first two years, quarterly for the next two years, and annually or semiannually for the remaining year. However, a one-year budget that is extended quarterly so that it again projects a full year is probably adequate for most uses.

As with any plan, the ensuing actual performance can be compared with the operating budget to detect "off-target" performances and to direct attention to troubled areas. In this way, the operating budget serves both as a planning tool and a control device. All functions of the business should be included when structuring the operating budget. By including all of the operating

costs, more performance measures and controls are possible. The costs incurred to increase the level of preparation detail will relate favorably to realization of cost savings through better control.

Since measurements of performance may be devised according to an operating budget, there is a natural tendency for people to "adjust" the budget process. The potential consequences should be considered: Sales managers may make overly optimistic assessments of the market, thus reducing the reliability of the cash allocations and expenses anticipated for that level of production and sales. Some manufacturing managers may "pad" a budget to build in a safety margin or premium. In a tight market or competitive sales conditions, this pad could make a product look less attractive than competing products. The concern should be to make the budget as realistic and accurate as possible because a reasonable budget based on a reasonable plan encourages reasonable performance.

## *Signs of Budget Ineffectiveness*

Some signs that the budget or budget process is less than optimally effective are:

- *Management or supervisory inattention to the budget.* Since a budget is, or can be used as, a measurement tool, accountability and review are necessary for control. Without review, there can be little corrective action, and thus there is a loss of control. If management is not using the budget as a control tool, determine whether the problem is with the budget or with the management.
- *A lack of complete participation by all levels of management within the firm.* Budgets dictated from upper management without input from the accountable people may have negative effects on the psychology of the employees and lower management. An attitude of "It's their budget, let's see them make it!" may develop.
- *Uncorrected large variances between planned performance and budget objectives.* Large budget variances may indicate one of several weaknesses:
  - Poor estimates

  - Poor feedback and lack of timely, corrective action
  - Ineffective management policies concerning budget maintenance
- *Lack of participation in the operation of the business by those who actively prepare the budgets.* Without a working knowledge of the dynamics of the operations of the business, it is difficult to maintain a working knowledge of current operational status. The amount or frequency of contact with operating departments is usually directly related to the stability of processes. The greater the variability in the operations of the business, the more frequently those who prepare the budget should observe and experience the operating environment.
- *Supervisors or first-line managers do not know how their budgets were determined or what is contained within their budgets.* In such cases, department managers do not know how performance is being evaluated, how well they are performing to expectations, where they may be doing well, and where they are experiencing unplanned difficulties.

Budgets of all types are good planning tools and can also serve a very valuable control function. In order to be used for control, these systems must supplement the budget process:

- *Feedback loop.* Creating the budget itself does not cause programs to be installed to implement the budget. A feedback loop is necessary to direct attention to areas where difficulties may be encountered in meeting the business plan. Periodic budget reports should generate feedback on performance against budget. These reports should trigger action. If the budget and related performance against budget reports do not flag attention to problem areas, you are missing the opportunity for needed improvements.
- *Feedback frequency.* The feedback loop requires continuous measurement of performance to budget estimates. For feedback to work properly, it should be regular, expected, and consistently reported. Comparisons are most effective when they are done regularly, consistently, and timely. Trend analysis of budget

performance is a good early warning device. Of course, benefits of the budget reporting process must outweigh the costs. However, the ongoing evaluation process is one of the places where you should realize substantial savings.

## *Improvements to the Budgeting System*

Some of the budgeting problems outlined in the last section can be eliminated or mitigated by implementing a sound budgeting procedure that is closely followed by the management team throughout the year. In this section we discuss a simple budgeting procedure that is useful for ensuring that the annual budget is constructed using a sufficient amount of time, and in the correct order. Later we also note the monthly schedule to be followed to ensure that the management team reviews the comparison of budget to actual results. However, these are strictly procedural matters; the management team still must be committed to following the dictates of the budget, which is largely up to the senior management team to enforce.

The budget procedure that follows is a guideline for the sequential steps a company should take to ensure that all components of the budget are completed in the correct order and reviewed by those people who will be responsible for budget results. The dates noted in the procedure are based on the assumption that a company is on a calendar year-end; for those companies with a different year-end, just shift the dates to match it.

1. *Expense update.* As of mid-November, issue to each department a listing of its expenses that are annualized based on actual expenses through October of the current year. The listing should include the personnel in each department and their current pay levels. Request a return date of 10 days in the future for this information, which should include estimated changes in expenses.
2. *Revenue update.* As of mid-November, issue to the sales manager a listing of revenue by month by business unit, through October

of the current year. Request a return date of 10 days in the future for this information.

3. *Capital expenditure update.* As of mid-November, issue a form to all department heads, requesting information about the cost and timing of capital expenditures for the upcoming year. Request a return date of 10 days in the future for this information.
4. *Automation update.* As of mid-November, issue a form to the manager of automation, requesting estimates of the timing and size of reductions in headcount in the upcoming year that are due to automation efforts. Request a return date of 10 days in the future for this information. Be sure to compare scheduled headcount reductions to the timing of capital expenditures, since they should track closely.
5. *Update the budget model.* These six tasks should be completed by the end of November:
   - Update the numbers already listed in the budget with information as it is received from the various managers. This may involve changing "hard coded" dollar amounts, or changing flex budget percentages. Be sure to keep a checklist of who has returned information, so that you can follow up with those personnel who have not returned requested information.
   - Verify that the indirect overhead allocation percentages shown on the budgeted factory overhead page are still accurate.
   - Verify that the Federal Insurance Contributions Act (FICA), State Unemployment Tax (SUTA), Federal Unemployment Tax (FUTA), medical, and workers' compensation amounts listed at the top of the staffing budget are still accurate.
   - Add job titles and pay levels to the staffing budget as needed, along with new average pay rates based on projected pay levels made by department managers.
   - Run a depreciation report for the upcoming year, add the expected depreciation for new capital expenditures, and add this amount to the budget.
   - Revise the loan detail budget based on projected borrowings through the end of the year.
6. *Review the budget.* Print out the budget and circle any budgeted expenses or revenues that are significantly different from the

annualized amounts for the current year. Go over the questionable items with the managers who are responsible for those items.

7. *Revise the budget.* Revise the budget, print it again, and review it with the president. Incorporate any additional changes. If the cash balance is excessive, you may have to manually move money from the cash line to the debt line to represent the paydown of debt.
8. *Issue the budget.* Bind the budget and issue it to the management team.
9. *Update accounting database.* Enter budget numbers into the accounting software for the upcoming year. All tasks should be completed by mid-December.[1]

Once the budget has been completed, there must be a feedback loop that sends budget variance information back to the department managers. The best feedback loop is to complete a budget to actual variance report that is sorted by the name of the responsible manager (see Figure 1.8 on page 24) as soon as the financial statements have been completed each month. The controller should take this report to all of the managers and review it with them, bringing back detailed information about each variance, as requested. Finally, there should be a meeting as soon thereafter as possible between the responsible managers and senior management to review variance problems and what each of the managers will do to resolve them. The senior managers should write down these commitments and return them to the managers in memo form; this document forms the basis for the next month's meeting, which will begin with a review of how well the managers have done to attain the targets to which they are committed. A key factor in making this system work is the rapid release of accurate financial statements, so that the department managers will have more time to respond to adverse variance information.

[1] Reprinted with permission from Bragg, Steven, *The Design and Maintenance of Accounting Manuals, 1999 Supplement* (New York: John Wiley & Sons, 1999), pp. 64–66.

## *Responsibility Accounting*

Responsibility accounting means structuring systems and reports to highlight the accountability of specific people. The process involves assigning accountability to departments or functions in which the responsibility for performance lies.

Specific responsibility is a necessary concept of management control. Accounting encompasses at least three purposes: financial reporting, product or service cost reporting, and performance evaluation reporting. The third function of accounting, the performance measurement function, is closely related to the operational function of the business. Since many businesses now evaluate and manage employees by objectives, the need for more sophisticated performance measurement tools has increased.

In a management-by-objectives (MBO) system, the individual must have the authority necessary to carry out the responsibility he or she is asked to execute. Without the necessary authority, a person cannot, and should not, be expected to meet the responsibilities imposed.

Within this level of responsibility, a person can be evaluated only when the performance reporting system is tied to the expected level of performance. A person's actual performance is keyed to this budget expression of expected performance.

Responsibility accounting should not be restricted to any one management level but should measure expected performance throughout the hierarchy of the business. Key indicators can be built into the system to evaluate performance and to trigger reactions to unanticipated results. In this way, management at each level is called on to intervene only when it is necessary to correct problems or substandard performance. This management-by-exception system frees up significant time for managers to plan and coordinate other essential business functions.

In contrast with financial accounting, responsibility accounting does not simply group like costs but instead segments the business into distinct responsibility centers. A measurement process is established to compare results obtained against objectives established for

the segment prior to the end of a plan/budget period. These objectives are part of the operating budget and comprise the targets of operation for every segment of the business.

To be effective, responsibility accounting must be tailored to each individual business. The accounting system must be adjusted to conform with the responsibility centers established. The revenue and expense categories must be designed to fit the functions or operations that management believes are important to monitor and evaluate. For example, the use of electricity by a particular machine may be significant, and excessive use may be an early warning sign of a process problem. Management would want to meter electricity consumption and have the expense reported as a line item to be measured against standard consumption rates by machine or by department.

Another function of the responsibility accounting system is to compile the individual centers' performance reports into successively aggregated collective reports to identify broader categories of responsibility. Behind these groupings is still a great deal of detailed information available for analysis.

### *Developing Responsibility Centers*

A responsibility center has no standard size. It can be as small as a single operation or machine or as large as the entire business. The business is, after all, the responsibility center of the chief executive of the business. Typically, the business is broken down into a large number of centers or segments that, when plotted in successive layers or groupings, look like a pyramid. This pyramiding represents the hierarchy of authority and responsibility of the business. Various types of responsibility centers may be established for various purposes. The nature of the centers or segments can also vary.

If a person is charged with only the responsibility for the costs incurred in a process or operation, a *cost center* has been established. Cost centers can be line operations (i.e., painting) or staff functions (i.e., recruiting). The emphasis of a cost center is on producing goods or providing specific services in conjunction with other physical measures of performance. Usually there is no direct revenue

production measurement by that center because the center does not produce the final product.

Another segment is a unit held responsible for the profit contribution it makes. This responsibility center is aptly named a *profit center.* Profit centers are often larger units than cost centers because a profit center requires the production of a complete product or service to make a contribution to the profit. (However, a salesperson could be considered a profit center.) The establishment of a profit center should be based on established managerial criteria of revenues and costs.

Other divisions can be established, such as *revenue centers* and *investment centers.* Revenue centers, for instance, are segments of the larger profit centers charged with the responsibility of producing revenue. Sales departments are a typical example. An investment center is a profit center that also has the responsibility of raising and making the necessary investment required to produce the profit. This added investment step would require the use of some rate-of-return test as an objective measure of the center's performance.

The appropriate establishment of cost centers, profit centers, and the like is a critical element of the responsibility reporting system, and as such must be performed carefully and accurately.

## *Establishing Costs*

Another important aspect of responsibility accounting is the accumulation of costs. Accountants have labeled the standard types of costs typically encountered: fixed, variable, and semivariable. Within these classifications, some costs may be incurred at the discretion of specific levels of management whereas others are nondiscretionary at given levels of management. Sometimes costs relate to more than one center and must be allocated between them. The most effective system probably will result when responsible management has been an active participant in the determination of the allocation of costs and the maintenance of the reporting system.

One complication of accumulating costs is the problem of transfer pricing. In manufacturing businesses, a cost center's performance is a function of the added costs and the intracompany

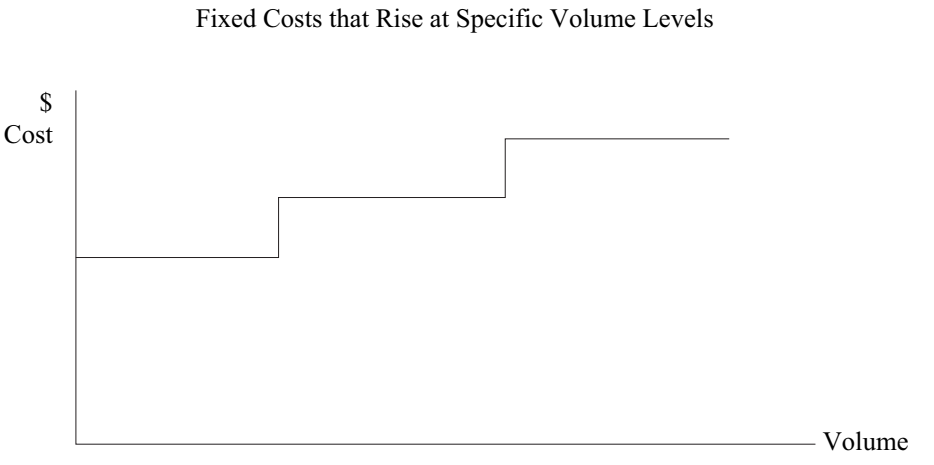
movements of raw materials, work-in-progress, finished goods, and services performed. A market price may not be available or may be too uncertain, because of fluctuations, to use as an objective measure of performance. Some compromise is often necessary to establish transfer prices among departments.

***Fixed Costs.*** A fixed cost is one that does not vary directly with volume. Some costs are really fixed, such as interest on debt. Other typically identified fixed costs, such as depreciation expense, may vary under some circumstances. Generally, over a broad range of operations, total fixed costs are represented as step functions because they are incurred in increments as production or the number of services increases.

This characteristic of fixed costs should not present any great difficulty. Since production or sales is predicted for a budget period, the level of fixed costs can be established from graphs such as that in Figure 1.1. Unfortunately, fixed costs, because of their apparent static behavior, are not always reviewed regularly and critically to determine reasonableness. Like all other costs, the larger the amount of individual fixed costs, the more frequently they should be reviewed. For example, insurance premiums may vary little, if at

**FIGURE 1.1**

**Fixed Costs**



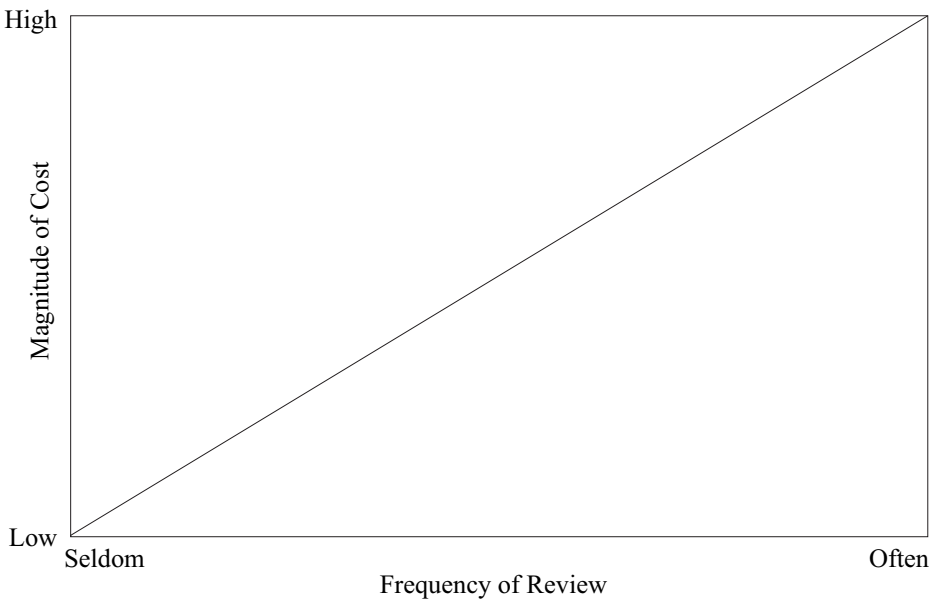
all, from year to year and may be paid without reconsideration, particularly in good times.

Figure 1.2 represents the relationship between the magnitude of a particular fixed cost and the frequency with which it should be reviewed. When making such an assessment for yourself, you should be aware of such factors as the cost of reconsideration in setting the time periods for "seldom" through "often." The process of reevaluating insurance coverage may be a significant task, requiring a major allocation of time and resources. However, the returns could be equally significant if you realize substantial savings resulting from a renegotiation of the insurance policy and rates.

Another concern with fixed costs is the method of allocation of those costs among different products or services. Fixed costs are often assigned in an arbitrary manner, creating an unrealistic profit or loss statement for each product. Otherwise, nonprofitable products are sometimes carried by an "average fixed cost" allocation, which may not accurately depict costs associated with the product. Accurate decisions are unlikely without correct information concerning a

**FIGURE 1.2**

**Relationship of Cost to Review Frequency**



product's costs. You should undertake to allocate fixed costs properly through the preparation of an operating budget. Your accountant should have a reasonable understanding of the magnitude of the costs and of which products or services are affecting the amount. Also, you should determine how varying activity levels influence the costs you incur for different products and services.

When analyzing fixed costs, you should determine what causes that cost to be incurred and what causes it to change in amount. This analysis will help identify to which product(s) or service(s) the cost should be assigned and in what manner that allocation should be made.

For some fixed costs, this will be a very difficult process. Some administrative costs may simply not be identifiable with any one product or service. Successive allocations through your costing hierarchy may be needed to arrive finally at a "product-attributable" status.

You may treat such costs as variable and determine a rate at which to assign these costs against labor hours. In determining this burden or overhead rate, such fixed costs are divided by an estimate or projection of the anticipated direct labor hours and are allocated proportionately. However, this method may unfairly assign costs to labor-intensive products, ignoring that more fixed costs should perhaps be allocated to products with large capital or fixed investments. Furthermore, this assignment could underrecover fixed costs by misestimating projected direct labor hours. Or, equally likely, an overrecovery of fixed costs could occur.

You should take a realistic approach in the allocation of these costs. If a direct hour allocation is realistic, then use it. If fixed costs can be identified to particular product(s) or service(s), it is appropriate to do so.

***Variable Costs.*** In order to be properly classified as variable, a cost should meet two distinct criteria:

1. No cost should be incurred until an activity begins.
2. A direct relationship should exist between the amount of the cost and the level of activity.

An example of a purely variable cost is a sales commission. As sales increase or decrease, the amount of commission varies in direct relationship to the level of sales.

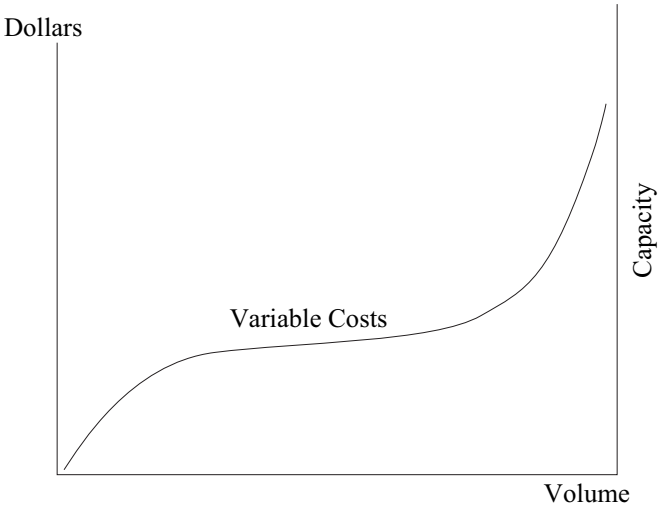
The relationship between the cost and the level of production may be a straight-line relationship, or the cost rate may increase as the level of output increases. When plotted, this increasing cost relationship will appear as a curvilinear (or curved shape) graph.

Although this relationship is common to variable costs, Figure 1.3 is not the usual way it is shown. The more usual case is the straight-line relationship. Often setup costs are spread over production, in which case there is a curvilinear relationship; but that is not the same case. In the setup cost allocation, a fixed cost is spread over varying units of output, decreasing as the length of the production run increases. The earlier example is an increasing cost per unit as the number of units produced increases.

Typically, costs such as direct labor, scrap costs, packaging, and shipping are treated as variable costs. However, direct labor and other costs may not be purely variable. For example, the assumption

**FIGURE 1.3**

**Actual Relationship between Variable Cost and Level of Production**



that direct labor varies directly with the number of units produced relies on the divisibility assumption. But labor is not infinitely divisible. If an employee can produce 1,600 units in a standard eight-hour workday but only 1,200 units are required, unless that employee can be used in another operation, he or she has been used at a 75 percent utilization level. Either this idle-time labor can be used effectively in other places or 25 percent of these (unutilized) efforts are assigned to fewer units produced. In most cases, direct labor and direct materials are treated as variable costs for budget purposes even if they are not perfectly divisible.

If you have established labor standards for your operations, these can be used for budgeting purposes. By accumulating data and establishing labor standards, you can begin to target costs. The difficulty is establishing objective labor-hour targets for the planning period. Reliance solely on historical data may bias projections, ignore the effects of the learning curve on efficiency, and avoid consideration of past inefficiencies.

For planning purposes, remember that the graph of these fixed and variable costs appears reversed *when they are assigned on a per-unit basis.* When variable costs are assigned on a per-unit basis, they are constant and fixed per unit. When fixed costs are assigned on a per-unit basis, they vary as production levels change.

***Mixed Costs.*** Mixed costs are those that behave as if they have fixed and variable components. Many items of cost fall into this category. Some people treat mixed costs as fixed costs. If you do so, you must assume an average or projected level of output and allocate the cost over that level. This may over- or underrecover that component of fixed cost. Some might say that it is not important because the over- or underrecovery will be insignificant.

If a consistent bias toward underrecovery of the fixed component of one mixed cost exists, underrecovery of the fixed component of every mixed cost, allocated on the basis of that misestimated output level, may exist. If you use these biased data to make capital investment decisions, marketing and pricing decisions, and expansion or contraction decisions, you may experience serious problems.

It is sometimes difficult to determine what portion of a mixed cost is fixed and what portion is variable. Fortunately, this allocation

usually can be established from historical data. As an example, data for the consumption of electricity in one department were tabulated for the previous six months (see Figure 1.4).

Plotting this consumption (see Figure 1.5), with the *Y* axis being kilowatt hours (kWh) consumed and the *X* axis being the units produced, the *Y* intercept is 5,000 kWh. This indicates that for zero production, the department still consumes 5,000 kWh of electricity each month, the fixed component of cost.

The variable component can then be determined by using the formula:

$$Y = MX + B$$

Because *B*, the *Y* intercept, is 5,000:

$$Y = MX + 5{,}000$$

Substituting any set of values from the table into the equation:

$$7{,}500 = M(400) + 5{,}000$$

and solving for (*M*), $M = 6.25$. Therefore, each unit of production has a variable component of 6.25 kWh in electrical consumption. By applying the electric rate to each component of electrical usage, the fixed- and variable-cost components of the mixed cost are determined.

***Historical Data.*** One major concern of using historical data as a basis for future prediction is that the firm may be perpetuating past inefficiencies. However, historical data may be the best or even the only data available. When using historical data, you should be sure that:

- Historical data accurately state the past. An examination must be made of the conditions under which data were collected and what is and is not contained in the data.
- Historical data are relevant to what the firm is trying to predict. To the extent current conditions are not the same as past

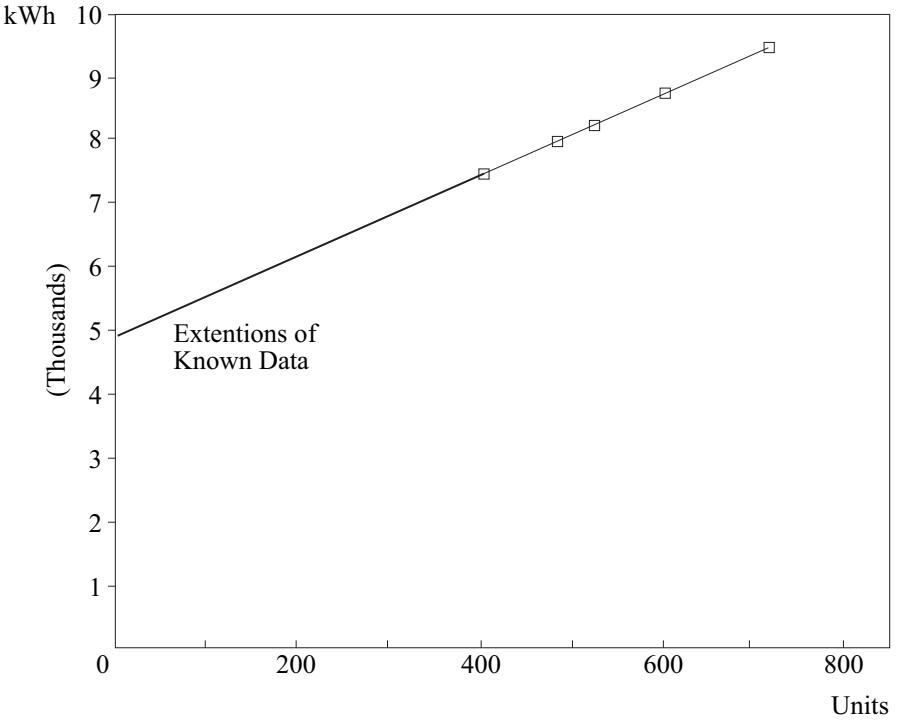
**FIGURE 1.4**

## Consumption of Power Table

| | kWh Used | Units Produced |
|---|---|---|
| Jan | 7,500 | 400 |
| Feb | 8,000 | 480 |
| Mar | 8,250 | 520 |
| Apr | 8,750 | 600 |
| May | 9,500 | 720 |
| June | 8,750 | 600 |

**FIGURE 1.5**

## Consumption of Power Graph



conditions, historical data become more difficult to use in projecting the future.
- The use of the data encourages performance that improves on the past performance.
- The effects of inflation are properly considered.

Further *practical points* in the use of historical data include:

- Avoid using historical data more than 12 months old in periods of high inflation or deflation.
- Be consistently objective. Do not bias the data by summarily rejecting data that seem to be out of line. There may be a reason for unusual numbers.
- Be creative; try not to be bound by traditional thinking. Some of the relationships between costs and activities may not seem direct and quantifiable. This could be the result of delayed billings or nontraditional billings.
- Consider and try using moving averages for data that tend to be nonlinear or scattered.
- Use extrapolation to project data for future estimated production or service levels.
- Never use tools past the point that common sense tells you is meaningful.

## *Projecting Revenues*

Often firms want a forecast of earnings for the entire enterprise to compare with the operating budgets. This forecast of revenues should be reconciled with the operating budget.

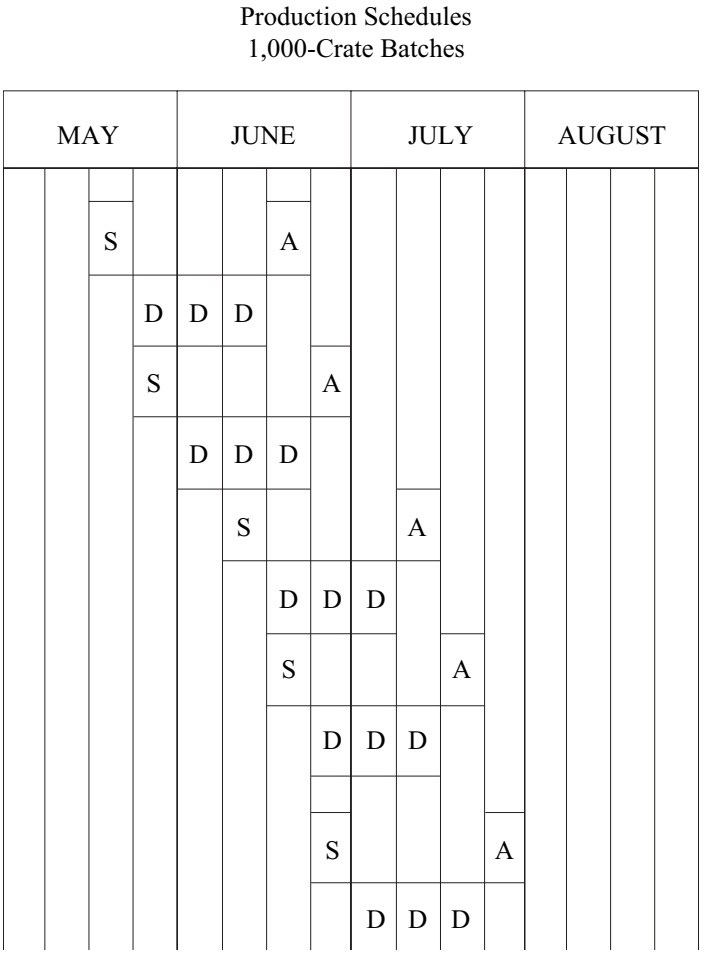
The basis of all revenue projections is a sales forecast. Many companies start the operating budget process by first generating this sales forecast. The sales forecast is exploded with lead and lag times added so that departmental schedules are created. This departmental scheduling of activities is then used to create the operating budget. For example, Fruit Crate Manufacturing Co., Inc., has a maximum production capacity of 1,000 crates per week and expects this sales forecast:

| | July | Aug |
|---|---|---|
| Type A crate | 2,000 | 3,000 |

To produce a type A crate, the firm's process breaks down into three steps: sawing, curing or drying, and assembly. The sawing and curing is done in batches of 1,000 crates, and the rate of production is:

**FIGURE 1.6**

## Exploded Production Schedule



| | |
|---|---|
| Sawing | 1,000 crates/1 week |
| Drying | 1,000 crates/3 weeks |
| Assembly | 1,000 crates/1 week |

Since all sales are shipped on the first of each month, the exploded production schedule shown in Figure 1.6 is used for budgeting.

Armed with this operating schedule, the company can plan its equipment, labor, and materials scheduling, and a budget of expenses can be generated. For example, in May, two weeks of sawing and one week of drying must be budgeted; in June, three weeks of sawing, eight weeks of drying, and two weeks of assembly; and so forth.

As manufacturing and related costs are pushed back in time, the receipt of payments (cash flows) is pushed forward in time. If Fruit Crate Manufacturing Co., Inc., offers a 2/10, N/30 payment schedule (2 percent discount if paid within 10 days of invoice, the net amount due within 30 days), it will ship on July 1, having incurred expenses in May and June, but not expect payment until July 10 or August 1. The timing of cash flows, the revenue portion, and the expense portion of the plan must be coordinated to ensure that adequate funds are on hand (cashflow budget) to meet expected operations. For this example, there is a negative cash flow for at least two and a half months.

## *Budget Tracking and Maintenance*

So far, this chapter has emphasized establishing responsibility and developing a budget and accounting system that conforms to an allocation of responsibility. The cardinal principle behind this system is that those who are to be measured by the system understand how it works and agree that the objectives are attainable *through their efforts.*

The first requirement should be an integration of your objectives, goals, and tactics to the managerial level involved. One method for integration is to have each manager participate in establishing and maintaining the objectives and goals. The test of reasonableness should apply. That is, there should be a reasonable likelihood of obtaining the objective in order to motivate compliance.

An element that often impedes effective budgeting and attainability is the inability to identify controllable and uncontrollable costs or expenses. Controllable costs should be identified and targeted. If elements of uncontrollable costs are included in a responsibility-based budget, they may have a negative motivation factor. Practically, all revenue and expense factors are controllable by some manager at some point. However, expenses such as property taxes may influence profits, yet be beyond the control of an operations manager. Items such as administrative overhead allocation are uncontrollable within departments of the firm. As a general rule, these items should be assigned and accounted for separately, so as not to indicate responsibility of the manager (e.g., heating, lighting, janitorial).

The final element in the budget tracking plan is variance analysis and reporting. Variance reporting can take many forms, but the most common is to compare monthly actuals to monthly projections with year-to-date comparisons as well. Often the report will contain space for an explanation of the variance from budget. The report can be generated in many forms, including by product, by operation or group, by labor, and by materials. A typical report could look like the one shown in Figure 1.7.

The report shown in Figure 1.7 compares budgeted to actual costs by account category, such as repair supplies or insurance. Although this format is good for determining trends in certain cost categories, it does not assist in targeting which managers are responsible for specific costs. An example of a report that includes this information is shown in Figure 1.8. In this example, we have used the same expense line items but also added a column that lists the name of the manager who is responsible for each expense. Further, we have sorted the report by the names of those managers. This sorting has two purposes:

1. It divides the report into separate pages for each manager, so that each one can easily group together the expenses for which he or she is responsible.
2. Sorting the report by manager allows you to summarize variances for each person, so that senior managers can determine which managers are doing the best job of keeping their costs

FIGURE 1.7

## Budgeted versus Annual Costs

| | Month | | | Year-to-Date | | | Explanations |
|---|---|---|---|---|---|---|---|
| | Budget | Actual | % Var | Budget | Actual | % Var | |
| A. Controllable<br>Direct Labor<br>Operating Supplies<br>Repair Labor<br>Repair Supplies<br>Heat, Light, Power | | | | | | | |
| Subtotal | | | | | | | |
| B. Raw Materials | | | | | | | |
| Subtotal | | | | | | | |
| C. Overhead<br>Supervisory Salaries<br>Corporate Overhead<br>Taxes<br>Insurance<br>Depreciation Expense | | | | | | | |
| Subtotal | | | | | | | |
| Total | | | | | | | |

FIGURE 1.8

## Comparison of Budget to Actual, Sorted by Responsibility

| Expense Description Variance | Responsible Manager | Month | | | Year-to-Date | | |
|---|---|---|---|---|---|---|---|
| | | Budget | Actual | % Variance | Budget | Actual | % |
| Direct Labor | D. Hendricks | 25,400 | 23,000 | –9% | 177,800 | 161,000 | –9% |
| Repair Labor | D. Hendricks | 8,000 | 7,250 | –9% | 56,000 | 50,750 | –9% |
| Supervisory Salaries | D. Hendricks | 7,250 | 7,000 | –3% | 50,750 | 49,000 | –3% |
| Totals | | 40,650 | 37,250 | –8% | 284,550 | 260,750 | –8% |
| Operating Supplies | R. Olbermann | 1,450 | 1,500 | 3% | 10,150 | 10,500 | 3% |
| Repair Supplies | R. Olbermann | 3,300 | 3,500 | 6% | 23,100 | 24,500 | 6% |
| Depreciation Expense | R. Olbermann | 500 | 520 | 4% | 3,500 | 3,640 | 4% |
| Totals | | 5,250 | 5,520 | 5% | 36,750 | 38,640 | 5% |
| Heat, Light, Power | T. Abrams | 3,200 | 1,700 | –47% | 22,400 | 11,900 | –47% |
| Raw Materials | T. Abrams | 89,450 | 79,500 | –11% | 626,150 | 556,500 | –11% |
| Corporate Overhead | T. Abrams | 55,000 | 56,000 | 2% | 385,000 | 392,000 | 2% |
| Taxes | T. Abrams | 11,500 | 10,250 | –11% | 80,500 | 71,750 | –11% |
| Insurance | T. Abrams | 27,050 | 26,000 | –4% | 189,350 | 182,000 | –4% |
| Totals | | 186,200 | 173,450 | –7% | 1,303,400 | 1,214,150 | –7% |

within designated goals, which can be of assistance when determining the size of manager bonuses.

In Figure 1.8, the report reveals that the only manager who is consistently failing to achieve actual costs that are less than the budget is R. Olbermann, whose cumulative variance performance is 5 percent worse than the budget.

When the management team reviews revenue and expense variances, it does not have time to review what may be hundreds of individual accounts. Instead, it has sufficient time to analyze only a small proportion of the largest variances. Accordingly, the accounting staff can issue a summarized version of Figure 1.8 that lists only line items for which variances exceed a certain monthly or year-to-date dollar amount or percentage. The remaining accounts can still be issued as an addendum to the variance report. This slight format change will focus management's attention on the few largest variances that are most in need of correction.

This form of reporting consistently shows management the variations from budget, with an explanation of causes and circumstances. It thus meets the second and third objectives of a budget: to keep score and direct attention.

## *The System of Interlocking Budgets*[2]

A properly designed budget is a complex web of spreadsheets that accounts for the activities of virtually all areas within a company. As noted in Figure 1.9, the budget begins in two places, with both the revenue budget and the research and development (R&D) budget. The revenue budget contains the revenue figures that the company believes it can achieve for each upcoming reporting period. These estimates come partially from sales staff members, who are responsible for estimates of sales levels for existing products within their current territories. Estimates for the sales of new products that have not yet been released and for existing products in new markets will

[2] Adapted with permission from Steven M. Bragg, *Ultimate Accountants' Reference* (Hoboken, NJ: John Wiley & Sons, 2005), pp. 340–348.

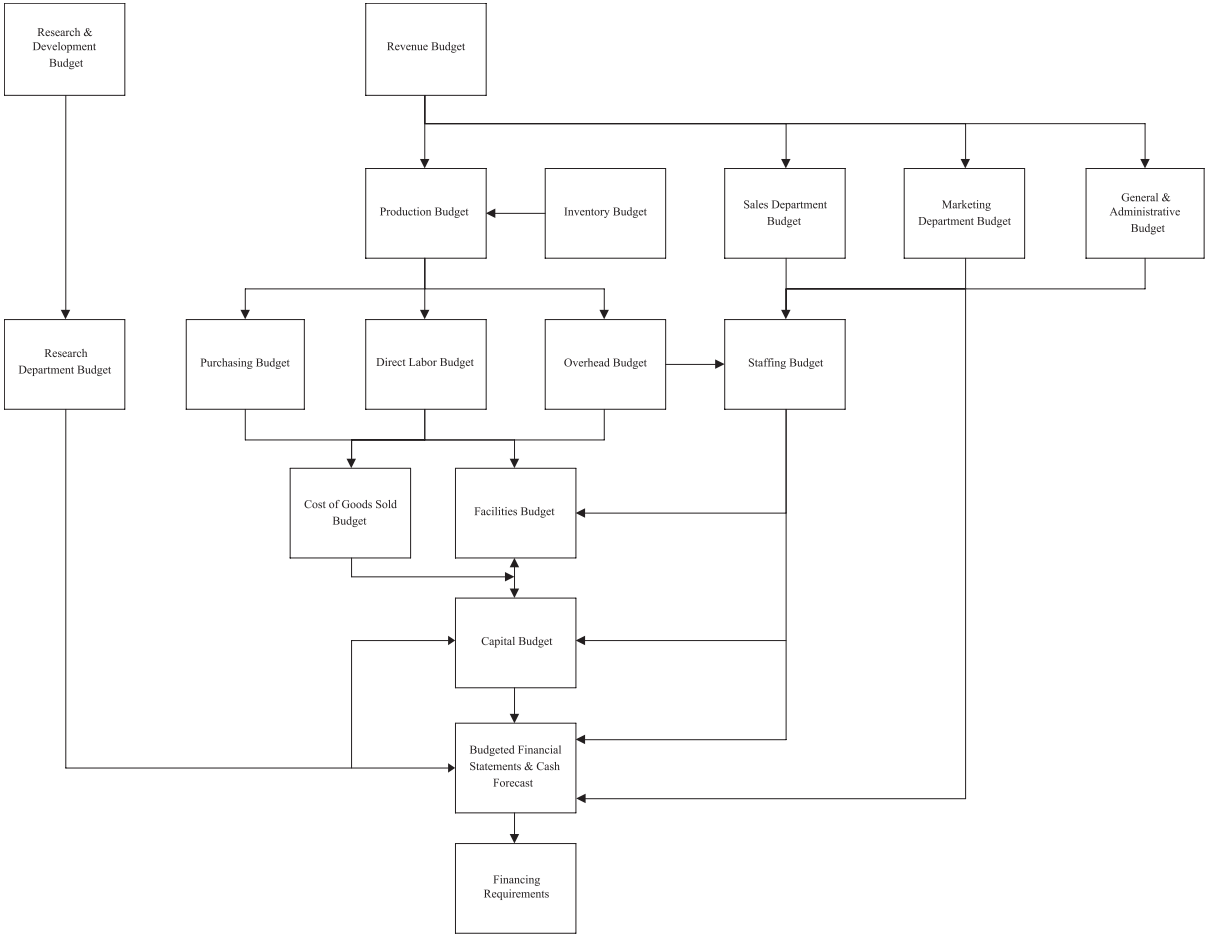
come from a combination of sales and marketing staff members, who will use their experience with related product sales to derive estimates. The greatest fallacy in any budget is to impose a revenue budget from the top management level without any input from the sales staff; this can result in a company-wide budget that is geared toward a sales level that is most unlikely to be reached.

A revenue budget requires prior consideration of a number of issues. For example, a general market share target will drive several other items within the budget, since greater market share may come at the cost of lower unit prices or higher credit costs. Another issue is the compensation strategy for the sales staff, since a shift to higher or lower commissions for specific products or regions will be a strong incentive for sales staff members to alter their selling behavior, resulting in some changes in estimated sales levels. Yet another consideration is which sales territories are to be entered during the budget period; those with high target populations may yield very high sales per hour of sales effort, while the reverse will be true if the remaining untapped regions have smaller target populations. It is also necessary to review the price points that will be offered during the budget period, especially in relation to the pricing strategies that are anticipated from competitors. If there is a strategy to increase market share as well as to raise unit prices, then the budget may fail due to conflicting activities. Another major factor is the terms of sale, which can be extended, along with easy credit, to attract more marginal customers; conversely, they can be retracted in order to reduce credit costs and focus company resources on a few key customers. A final point is that the budget should address any changes in the type of customer to whom sales will be made. If an entirely new type of customer will be added to the range of sales targets during the budget period, then the revenue budget should reflect a gradual ramp-up that will be required for sales staff members to work through the sales cycle of the new customers.

Once all of these factors have been combined to create a preliminary revenue budget, the sales staff members should also compare the budgeted sales level per person to the actual sales level that has been experienced in the recent past to see if the company has the existing capability to make the budgeted sales. If not, the revenue budget should be ramped up to reflect the time it will take

## FIGURE 1.9

# The System of Budgets



to hire and train additional salespeople. The same cross-check can be conducted for the amount of sales budgeted per customer, to see if historical experience validates the sales levels noted in the new budget.

Another budget that initiates other activities within the system of budgets is the R&D budget. Unlike most other budgets, this is not related to the sales level at all, but instead is a discretionary budget based on the company's strategy to derive new or improved products. The decision to fund a certain amount of project-related activity in this area will drive a departmental staffing and capital budget that is, for the most part, completely unrelated to the activity conducted by the rest of the company. However, there can be a feedback loop between this budget and the cash budget, since financing limitations may require management to prune some projects from this area. If so, the management team must work with the R&D manager to determine the correct mix of projects with both short-range and long-range payoffs that will still be funded.

The production budget is driven largely by the sales estimates contained within the revenue budget. However, it is also driven by the inventory-level assumptions in the inventory budget. The inventory budget contains estimates by the materials management supervisor regarding the inventory levels that will be required for the upcoming budget period. For example, a new goal may be to reduce the level of finished goods inventory from 10 turns per year to 15. If so, some of the products required by the revenue budget can be bled off from the existing finished goods inventory stock, requiring smaller production requirements during the budget period. Alternatively, if there is a strong focus on improving the level of customer service, then it may be necessary to keep more finished goods in stock, which will require more production than is strictly called for by the revenue budget. This concept can also be extended to work-in-process (WIP) inventory, where the installation of advanced production planning systems, such as manufacturing resources planning or just-in-time, can be used to reduce the level of required inventory. All of these assumptions should be clearly delineated in the inventory budget, so that the management team is clear about what systemic changes will be required in order to effect altered inventory turnover levels.

Given this input from the inventory budget, the production budget is used to derive the unit quantity of required products that must be manufactured in order to meet revenue targets for each budget period. This involves a number of interrelated factors, such as the availability of sufficient capacity for production needs. Of particular concern should be the amount of capacity at the bottleneck operation. It is important to budget a sufficient quantity of funding to ensure that this operation includes enough equipment to meet the targeted production goals. If the bottleneck operation involves skilled labor, rather than equipment, then the human resources department should be consulted regarding its ability to bring in the necessary personnel in time to improve the bottleneck capacity in a timely manner.

The expense items included in the production budget should be driven by a set of subsidiary budgets: the purchasing, direct labor, and overhead budgets. These budgets can simply be included in the production budget, but they typically involve such a large proportion of company costs that it is best to lay them out separately in greater detail in separate budgets. Specifics on these budgets follow.

- *Purchasing budget.* The purchasing budget is driven by several factors, first of which is the bill of materials that comprises the products that are planned for production during the budget period. These bills must be accurate, or else the purchasing budget can include seriously incorrect information. In addition, there should be a plan for controlling material costs, perhaps through the use of concentrated buying through few suppliers or perhaps through the use of long-term contracts. If materials are highly subject to market pressures, comprise a large proportion of total product costs, and have a history of sharp price swings, then a best-case and worst-case costing scenario should be added to the budget, so that managers can review the impact of costing issues in this area. It is also worthwhile to budget for a raw material scrap and obsolescence expense; there should be a history of costs in these areas that can be extrapolated based on projected purchasing volumes.
- *Direct labor budget.* Do not make the mistake of budgeting for direct labor as a fully variable cost. The production volume from

day to day tends to be relatively fixed, and requires a set number of direct labor personnel on a continuing basis to operate production equipment and manually assemble products. Thus, direct labor should be shown in the budget as a fixed cost of production, within certain production volume parameters.

Also, this budget should describe staffing levels by type of direct labor position; this is driven by labor routings, which are documents that describe the exact type and quantity of staffing needed to produce a product. When multiplied by the unit volumes located in the production budget, the labor routing results in an expected level of staffing by direct labor position. This information is most useful for the human resources department, which is responsible for staffing the positions.

The direct labor budget should also account for any contractually mandated changes in hourly rates, which may be itemized in a union agreement. Such an agreement may also have restrictions on layoffs, which should be accounted for in the budget if this will keep labor levels from dropping in proportion with budgeted reductions in production levels. Thus, the presence of a union contract can result in a much more complex direct labor budget than would normally be the case.

Any drastic increases in the budgeted level of direct labor personnel will likely result in some initial declines in labor efficiency, since it takes time for new employees to learn their tasks. If this is the case, the budget should reflect a low level of initial efficiency that will result in greater initial direct labor costs, with a ramp-up over time to higher levels.

- *Overhead budget.* The overhead budget can be a simple one to create if there are no significant changes in production volume from the preceding year, because this budget involves a large quantity of static costs that will not vary much over time. Included in this category are machine maintenance; utilities; supervisory salaries; wages for the materials management, production scheduling, and quality assurance personnel; facilities maintenance; and depreciation expenses. Under the no-change scenario, the most likely budgetary alterations will be to machinery or facilities maintenance, which are dependent on the condition and level of usage of company property.

If there is a significant change in the expected level of production volume, or if new production lines are to be added, then you should examine this budget in great detail, for the underlying production volumes may cause a ripple effect that results in wholesale changes to many areas of the overhead budget. Of particular concern is the number of overhead-related personnel who must be either laid off or added when capacity levels reach certain critical points, such as the addition or subtraction of extra work shifts. Costs also tend to rise substantially when a facility is operating at very close to 100 percent capacity, which calls for an inordinate amount of effort to maintain on an ongoing basis.

The purchasing, direct labor, and overhead budgets can then be summarized into a cost-of-goods-sold budget. This budget should incorporate, as a single line item, the total amount of revenue, so that all manufacturing costs can be deducted from it to yield a gross profit margin on the same document. This budget is referred to constantly during the budget creation process, since it tells management if its budgeting assumptions are yielding an acceptable gross margin result. Since it is a summary-level budget for the production side of the budgeting process, this is also a good place to itemize any production-related statistics, such as the average hourly cost of direct labor, inventory turnover rates, and the amount of revenue dollars per production person.

Thus far, we have reviewed the series of budgets that descend in turn from the revenue budget and then through the production budget. However, other expenses unrelated to production are categories in a separate set of budgets. The first is the sales department budget, which includes the expenses that the sales staff members must incur in order to achieve the revenue budget, such as travel and entertainment, as well as sales training. Of particular concern in this budget is the amount of budgeted headcount that is required to meet the sales target. It is essential that the actual sales per salesperson from the most recent completed year of operations be compared to the same calculation in the budget to ensure that there is a sufficiently large budget available for an adequate number of sales personnel. Often companies make the false assumption that the

existing sales staff can make heroic efforts to wildly exceed previous-year sales efforts. Furthermore, the budget must account for a sufficient time period in which new sales personnel can be trained and form an adequate base of customer contacts to create a meaningful stream of revenue for the company. In some industries, this learning curve may be only a few days, but it can be the better part of a year if considerable technical knowledge is required to make a sale. If the latter situation is the case, it is likely that the procurement and retention of qualified sales staff is the key element of success for a company, which makes the sales department budget one of the most important elements of the entire budget.

The marketing budget is also closely tied to the revenue budget, for it contains all of the funding required to roll out new products, merchandise them properly, advertise for them, test new products, and so on. A key issue here is to ensure that the marketing budget is fully funded to support any increases in sales noted in the revenue budget. It may be necessary to increase this budget by a disproportionate amount if you are trying to create a new brand, issue a new product, or distribute an existing product in a new market. These costs can easily exceed any associated revenues for some time.

Another nonproduction budget that is integral to the success of the corporation is the general and administrative budget, which contains the cost of the corporate management staff, plus all accounting, finance, and human resources personnel. Since this is a cost center, the general inclination is to reduce these costs to the bare minimum. However, there must be a significant investment in technology in order to achieve reductions in the manual labor usually required to process transactions; thus, there must be some provision in the capital budget for this area.

There is a feedback loop between the staffing and direct labor budgets and the general and administrative budget, because the human resources department must staff itself based on the amount of hiring or layoffs anticipated elsewhere in the company. Similarly, a major change in the revenue volume will alter the budget for the accounting department, since many of the activities in this area are driven by the volume of sales transactions. Thus, the general and

administrative budget generally requires a number of iterations in response to changes in many other parts of the budget.

Although salaries and wages should be listed in each of the departmental budgets, it is useful to list the total headcount for each position through all budget periods in a separate staffing budget. By doing so, the human resources staff members can tell when specific positions must be filled, so that they can time their recruiting efforts most appropriately. This budget also provides good information for the person responsible for the facilities budget, since he or she can use it to determine the timing and amount of square footage requirements for office space. Rather than being a stand-alone budget, the staffing budget tends to be one whose formulas are closely intertwined with those of all other departmental budgets. A change in headcount information on this budget will translate automatically into a change in the salaries expense on other budgets. It is also a good place to store the average pay rates, overtime percentages, and average benefit costs for all positions. By centralizing this cost information, the human resources department can update budget information more easily. Since salary-related costs tend to comprise the highest proportion of costs in a company (excluding materials costs), this budget tends to be heavily used.

The facilities budget is based on the level of activity that is estimated in many of the budgets just described. For this reason, it is one of the last budgets to be completed. This budget is closely linked to the capital budget, since expenditures for additional facilities will require more maintenance expenses in the facilities budget. This budget typically contains expense line items for building insurance, maintenance, repairs, janitorial services, utilities, and the salaries of the maintenance personnel employed in this function. When constructing this budget, it is crucial to estimate the need for any upcoming major repairs to facilities, since these can greatly amplify the total budgeted expense.

Another budget that includes input from virtually all areas of a company is the capital budget. This budget should comprise either a summary listing of all main fixed asset categories for which purchases are anticipated or else a detailed listing of the

same information; the latter case is recommended only if there are comparatively few items to be purchased. The capital budget is of great importance to the calculation of corporate financing requirements, since it can involve the expenditure of sums far beyond those that are normally encountered through daily cash flows. It is also necessary to ensure that capital items are scheduled for procurement sufficiently far in advance of related projects that they will be fully installed and operational before the scheduled first activity date of the project. For example, a budget should not itemize revenue from a printing press for the same month in which the press is scheduled to be purchased, because it may take months to set up the press.

The end result of all the budgets just described is a set of financial statements that reflects the impact of the upcoming budget on the company. At a minimum, these statements should include the income statement and cash flow statement, since these are the best evidence of fiscal health during the budget period. The balance sheet is less necessary, since the key factors on which it reports are related to cash, and that information is already contained within the cash flow statement. These reports should be directly linked to all the other budgets, so that any changes to the budgets will immediately appear in the financial statements. The management team will closely examine these statements and make numerous adjustments to the budgets in order to arrive at a satisfactory financial result.

The budget-linked financial statements are also a good place to store related operational and financial ratios, so that the management team can review this information and revise the budgets in order to alter the ratios to match benchmarking or industry standards that may have been set as goals. Typical measurements in this area can include revenue and income per person, inventory turnover ratios, and gross margin percentages. This type of information is also useful for lenders, who may have required minimum financial performance results as part of loan agreements, such as a minimum current ratio or debt-to-equity ratio.

The cash forecast is of exceptional importance, for it tells company managers if the proposed budget model will be feasible. If cash projections result in major cash needs that cannot be met by

any possible financing, then the model must be changed. The assumptions that go into the cash forecast should be based on strictly historical fact, rather than the wishes of managers. This stricture is particularly important in the case of cash receipts from accounts receivable. If the assumptions are changed in the model to reflect an advanced rate of cash receipts that exceeds anything that the company has ever experienced, it is very unlikely that it will be achieved during the budget period. Instead, it is better to use proven collection periods as assumptions and alter other parts of the budget to ensure that cash flows remain positive.

The last document in the system of budgets is the discussion of financing alternatives. This is not strictly a budget, although it will contain a single line item, derived from the cash forecast, that itemizes funding needs during each period itemized in the budget. In all other respects, it is simply a discussion of financing alternatives, which can be quite varied. Alternatives may involve a mix of debt, supplier financing, preferred stock, common stock, or some other, more innovative approach. The document should contain a discussion of the cost of each form of financing, the ability of the company to obtain it, and when it can be obtained. Managers may find that there are so few financing alternatives available, or that the cost of financing is so high, that the entire budget must be restructured in order to avoid the negative cash flow that calls for the financing. There may also be a need for feedback from this document into the budgeted financial statements in order to account for the cost of obtaining the funding and any related interest costs.

## *Need for Budget Updating*

Flexible or variable budgets should be kept current so that targets are realistic and accurately reflect deviations from expected costs. Budgets, however, may lose their effectiveness as a measuring and control device if they are adjusted for every small change in operating costs. There is no rule of thumb for triggering a budget adjustment. However, budgets should be adjusted for changes in product mix, major changes in cost levels, and schedule variations that significantly alter cost relationships.

On a departmental level, budget performance reflects actual departmental cost behavior, and budget gains or savings directly result in improvements in profits. The budget becomes an individual department's profit and loss expectation based on responsibility accounting.

One area in which potential problems may not be recognized is deferred maintenance. When increased output or profit is being emphasized, periodic maintenance is often deferred to "keep the wheels turning." This may be shortsighted, resulting instead in deferred costs when breakdowns occur.

## *Summary*

The operating budget is a tool that can be integrated into overall operations. It can give an indication about the delays between cash outlays for manufacturing and sales receipts. This delay can be quantified in the budget and thereby permit you to plan for carrying or acquiring additional cash for predictable periods.

As with any good planning tool, the operating plan and related budget points up the opportunity for capital expenditures or the need for tightening capital investments. Because sales predictions are the driving force behind budget numbers, you will plan sales forces, marketing objectives, advertising budgets, sales quotas, credit policies, and many other factors as parts of operational budgeting/planning.

Finally, manpower planning and allocation can be computed from the production schedule and direct labor rates. The formula is simply a direct allocation of hours per operation per product times the number of units of product scheduled for production, summed over all operations. For example, in the Fruit Crate case:

- The total labor hours per crate was .158 hours in May.
- In May, the firm scheduled 2,300 crates (equivalent) for production, which represents 363.4 direct labor hours.
- There were 176 hours (gross) per worker available in the month. The firm planned for 81 percent utilization in hours as a result of breaks, sickness, leave, and fatigue.

- The firm calculates 142.6 hours per man per month effective work time.
- By dividing 363.4 by 142.6, the firm arrives at 2.5 direct laborers necessary to produce the crates.

Using such an analysis, the firm can also break out, by operation, the number of employees needed for each task.

As a control device, an operating plan or budget can provide needed information and direct attention where variances have occurred.