CHAPTER 9
Profit Planning and Budgeting

PowerPoint Presentation by
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CHAPTER GOAL

This chapter shows how a short-term operating budget is established and how it fits into the overall plan for achieving organization goals. You will also learn how ethical issues affect the budgeting and performance evaluation process.
BUDGET: Definition

Is a plan of the resources needed to carry out tasks and meet financial goals.
Companies start the strategic planning process by stating their critical success factors, that is the most important things the company must do for success. Companies build on critical success factors to expand operations.
A master budget is part of the overall organization plan for the next year and includes:

- Organizational goals
- Strategic long-range profit plan
- Master budget (a tactical short-range profit plan)
ORGANIZATIONAL GOALS: Definition

Are broad objectives management establishes and employees work to achieve.
STRATEGIC LONG-RANGE PROFIT PLAN

Any plan that focuses on the intermediate or distant future is stated in broad terms

∗ Cost control
  ∗ Optimize contribution from existing product lines by holding product cost increases to less than the general rate of inflation

∗ Market share
  ∗ Maintain market share by providing a level of service and quality comparable to top competitors
Budgeting is an information gathering process where information comes from both internal and external sources.
PARTICIPATIVE BUDGETING: Definition

Is a process of gathering information from lower- and middle-management employees.
RESPONSIBILITY CENTER: Definition

Is a division, department responsible for managing a particular group of activities in the organization.
RESPONSIBILITY CENTERS: Four Types

✦ Cost centers
  ✦ Example: Manufacturing departments
  ✦ Managers responsible for managing costs
    ✦ Engineered cost centers: well-established input/output relations
      ✦ Production departments
    ✦ Discretionary cost centers: input/output relations not well specified
      ✦ Research departments

✦ Revenue centers
  ✦ Example: Marketing departments
  ✦ Managers responsible for revenues

Continued
Responsibility Centers: Four Types

- Profit centers
  - Managers responsible for managing costs and revenues

- Investment centers
  - Example: Corporate divisions
  - Managers responsible for costs, revenues, and assets
<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>Converts resources into products</td>
</tr>
<tr>
<td>Batch</td>
<td>Batch of same setup, personnel</td>
</tr>
<tr>
<td>Product</td>
<td>Support a particular product line</td>
</tr>
<tr>
<td>Customer</td>
<td>Meet customer needs</td>
</tr>
<tr>
<td>Facility</td>
<td>Support entire organization</td>
</tr>
</tbody>
</table>
SALES BUDGET

PRODUCTION BUDGET

MARKETING BUDGET

ADMINISTRATIVE BUDGETS

PROFIT PLANNING BUDGET
DEVELOPING SALES BUDGET

Forecasting Sales is the heart of the budgeting process and perhaps the most difficult. Information is sought from many sources.

- Sales staff
- Market researchers
- Delphi technique
- Trend analysis
- Econometric models
EXAMPLE: Victoria’s Gourmet Coffee

Victoria’s Gourmet Coffee is preparing its budget for the year.

Five departments are involved in budgeting process.
Victoria’s Gourmet Coffee forecasts three levels of sales for budgeting purposes.

**EXHIBIT 9.3**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Units</th>
<th>Sales (at $6/Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimistic</td>
<td>90,000 Units</td>
<td>$630,000</td>
</tr>
<tr>
<td>Expected</td>
<td>70,000 Units</td>
<td>$420,000</td>
</tr>
<tr>
<td>Pessimistic</td>
<td>50,000 Units</td>
<td>$250,000</td>
</tr>
</tbody>
</table>

Ultimately, Victoria’s chose the expected level of sales, 70,000 units @ $6 each, for their budgeting process.
Production budgets begin with Beginning Inventory (BI). They combine this with estimate of units to be sold and desired Ending Inventory (EI) to estimate production.

Units Produced =

Units to be sold + Desired EI – Units BI
Production budgets include direct materials, direct labor, and variable and fixed overhead.

### Exhibit 9.4

**Victoria’s Gourmet Coffee**

**Production Budget for Period 1**

<table>
<thead>
<tr>
<th>Units to Be Produced</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgeted Sales, in Units (see sales budget)</td>
<td>70,000</td>
</tr>
<tr>
<td>Desired Ending Inventory (assumed)</td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Total Units Needed</strong></td>
<td>78,000</td>
</tr>
<tr>
<td>Less Beginning Inventory (assumed)</td>
<td>(8,000)</td>
</tr>
<tr>
<td><strong>Units to Be Produced</strong></td>
<td>70,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs Expected to Be Incurred</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Unit-Level Costs (for 70,000 units):</strong></td>
<td></td>
</tr>
<tr>
<td>Direct Materials (2 pounds per unit at $0.50 per pound)</td>
<td>$70,000</td>
</tr>
<tr>
<td>Direct Labor (.125 hour per unit at $20 per hour)</td>
<td>175,000</td>
</tr>
<tr>
<td>Manufacturing Overhead:</td>
<td></td>
</tr>
<tr>
<td>Indirect Labor ($0.10 per unit)</td>
<td>7,000</td>
</tr>
<tr>
<td>Supplies ($0.04 per unit)</td>
<td>2,800</td>
</tr>
<tr>
<td>Power ($0.03 per unit)</td>
<td>2,100</td>
</tr>
<tr>
<td><strong>Total Unit-Level Costs</strong></td>
<td>256,900</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility-Level Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing Overhead:</td>
<td></td>
</tr>
<tr>
<td>Power ($1,000 per period)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Maintenance ($13,840 per period)</td>
<td>13,840</td>
</tr>
<tr>
<td>Rent ($6,000 per period)</td>
<td>6,000</td>
</tr>
<tr>
<td>Insurance ($1,000 per period)</td>
<td>1,000</td>
</tr>
<tr>
<td>Depreciation ($10,360 per period)</td>
<td>10,360</td>
</tr>
<tr>
<td><strong>Total Facility-Level Costs</strong></td>
<td>32,200</td>
</tr>
<tr>
<td><strong>Total Production Costs</strong></td>
<td>289,100</td>
</tr>
</tbody>
</table>
Marketing budgets are comprised of **variable** (unit) and **fixed** (customer and facility) costs.

**EXHIBIT 9.5**  
VICTORIA’S GOURMET COFFEE  
Marketing Cost Budget for Period 1

<table>
<thead>
<tr>
<th>Costs</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit-Level Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Commissions (2 percent of sales; see Exhibit 9.3, sales budget)</td>
<td>$8,400$^a$</td>
</tr>
<tr>
<td>Shipping Costs ($0.02 per unit shipped; see Exhibit 9.3, sales budget)</td>
<td>$1,400</td>
</tr>
<tr>
<td>Total Unit-Level Marketing Costs</td>
<td>$9,800</td>
</tr>
<tr>
<td><strong>Customer-Level Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Travel ($2,000 per period)</td>
<td>$2,000</td>
</tr>
<tr>
<td>Total Customer-Level Costs</td>
<td>$2,000</td>
</tr>
<tr>
<td><strong>Facility-Level Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Salaries ($25,000 per period)</td>
<td>$25,000</td>
</tr>
<tr>
<td>Advertising ($30,000 per period)</td>
<td>$30,000</td>
</tr>
<tr>
<td>Sales Office ($8,400 per period)</td>
<td>$8,400</td>
</tr>
<tr>
<td>Total Facility-Level Costs</td>
<td>$63,400</td>
</tr>
<tr>
<td>Total Marketing Cost Budget</td>
<td>$75,200</td>
</tr>
</tbody>
</table>

$^a$Two percent \( \times \) sales of $420,000 = $8,400.
Administrative budgets are comprised of fixed costs, some of which are discretionary.

**EXHIBIT 9.6**

VICTORIA’S GOURMET COFFEE
Administrative Cost Budget for Period 1

<table>
<thead>
<tr>
<th>Facility-Level Activities (all administrative costs are fixed)</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>President’s Salary</td>
<td>$10,000</td>
</tr>
<tr>
<td>Salaries of Other Staff Personnel</td>
<td>17,000</td>
</tr>
<tr>
<td>Supplies</td>
<td>2,000</td>
</tr>
<tr>
<td>Heat and Light</td>
<td>1,400</td>
</tr>
<tr>
<td>Rent</td>
<td>4,000</td>
</tr>
<tr>
<td>Donations and Contributions</td>
<td>1,000</td>
</tr>
<tr>
<td>General Corporate Taxes</td>
<td>8,000</td>
</tr>
<tr>
<td>Depreciation—Staff Office Equipment</td>
<td>1,400</td>
</tr>
<tr>
<td><strong>Total Administrative Cost Budget</strong></td>
<td><strong>$44,800</strong></td>
</tr>
</tbody>
</table>
Budget Profit plans combine information from all prior budgets to project an estimate of profit.

**EXHIBIT 9.7**

**VICTORIA’S GOURMET COFFEE**
Master Budget Profit Plan (income statement)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (70,000 units at $6)</td>
<td>$420,000</td>
</tr>
<tr>
<td>Variable Manufacturing Cost of Goods Sold (70,000 units at $3.67)</td>
<td>(256,900)</td>
</tr>
<tr>
<td>Variable Marketing Costs (70,000 units at $.14)</td>
<td>(9,800)</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>$153,300</td>
</tr>
<tr>
<td>Fixed Manufacturing Costs</td>
<td>(32,200)</td>
</tr>
<tr>
<td>Fixed Marketing and Administrative Costs ($65,400 + $44,800)</td>
<td>(110,200)</td>
</tr>
<tr>
<td>Operating Profits</td>
<td>$10,900</td>
</tr>
</tbody>
</table>
What happens if projected profit is not the desired profit?

When projected profit does not meet the desired level, managers will seek ways to improve profits.

What happens if actual sales and production differ from projected levels?

Managers can develop a flexible budget to compare actual with projected levels.
Flexible budget based on actual sales volume show higher profit.

**EXHIBIT 9.8**

**VICTORIA'S GOURMET COFFEE**  
Flexible Budget and Sales Volume Variance

<table>
<thead>
<tr>
<th></th>
<th>Flexible Budget (based on actual sales volume of 80,000)</th>
<th>Sales Volume Variance</th>
<th>Master Budget (based on a prediction of 70,000 units sold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$480,000&lt;sup&gt;a&lt;/sup&gt;</td>
<td>$60,000 F</td>
<td>$420,000&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Manufacturing Costs</td>
<td>293,600&lt;sup&gt;b&lt;/sup&gt;</td>
<td>36,700 U</td>
<td>256,900&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Variable Marketing Costs</td>
<td>11,200&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1,400 U</td>
<td>9,800&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>$175,200</td>
<td>$21,900 F</td>
<td>$153,300</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Manufacturing Costs</td>
<td>32,200</td>
<td>—</td>
<td>32,200</td>
</tr>
<tr>
<td>Fixed Marketing Costs</td>
<td>65,400</td>
<td>—</td>
<td>65,400</td>
</tr>
<tr>
<td>Fixed Administrative Costs</td>
<td>44,800</td>
<td>—</td>
<td>44,800</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>$32,800</td>
<td>$21,900 F</td>
<td>$10,900</td>
</tr>
</tbody>
</table>

<sup>a</sup>80,000 units sold at $6.00.  
<sup>b</sup>80,000 units sold at $3.67.  
<sup>c</sup>80,000 units sold at $0.14.  
<sup>d</sup>70,000 units sold at $6.00.  
<sup>e</sup>70,000 units sold at $3.67.  
<sup>f</sup>70,000 units sold at $0.14.  
U denotes unfavorable variance.  
F denotes favorable variance.
What do the terms “favorable” and “unfavorable” variance mean?

**Favorable** means the variance will **increase** profits; **unfavorable** means the variance will **decrease** profits.
IMPORTANCE OF BUDGETS

Budgets affect both organizational and individual performance. If sales forecasts are too high, excess inventory arises. Forecasts too low lead to lost sales. Individuals are rewarded when performance measures are met.
SUMMARY OF THE MASTER BUDGET

✶ The master budget summarizes management’s plans for the period covered. Preparing the master budget requires the participation of all managerial groups, from local plant and sales managers to the top executives of the firm and the board of directors.

✶ Once management adopts the budget, it becomes the major planning and control instrument. Master budgets are almost always static budgets; that is, they consider the likely results of the operations at the one level of operations specified in the budget.

✶ Computerizing the process makes it less costly to develop multiple master budgets that take into account various uncertainties facing the firm, such as market conditions, material prices, labor difficulties, and government regulations.27
IMPLICATIONS FOR INCENTIVE PLANS

Typical implications for developing good incentive plans include:

- developing incentive methods that provide rewards for both accurate forecasts and good performance.
- rewards that are positively related to forecasted sales to give incentives to forecast high rather than low.
- additional rewards for employees who beat the forecast and penalties for results worse than forecast.
This chapter describes and discusses variance analysis, including providing detailed comparisons of the profits achieved with those budgeted.
PROFIT VARIANCE ANALYSIS:
Definition

Shows the causes of total profit variance.
VARIANCES

Why do variances exist?

A budget is an estimate. Variances help explain why actual outcomes do not match those projected.

Variances are calculated for materials, labor, fixed and variable manufacturing overhead. Variances are divided between

- Price variance
- Efficiency variance (Production volume variance for fixed manufacturing overhead)
REASONS FOR VARIANCE

- A variance is the difference between a predetermined norm or standard and actual results
- Standards may be biased
- Systematic reasons
  - Change in prices
  - More/less efficient use of inputs
Why is the *standard* variable cost used to compute the CM instead of *actual* cost?

By using *standard* variable cost to compute the CM, we avoid mixing cost variances into calculating the effect of sales volume.
Who is charged with responsibility for sales volume, sales price and marketing cost variances?

Top management assigns marketing managers with responsibility for these variances.
Administrative variances are more difficult to manage because there is no well-defined causal relationship between administrative costs and production or sales output.
Variance analysis is conducted for major responsibility centers, holding all other things constant. After variances are computed, managers investigate the causes of these variances and take corrective action, if necessary.
PRICE VARIANCE: Definition

Measures the difference between the price set as norm (standard) and the actual price.
EFFICIENCY VARIANCE:
Definition

Measures the difference between the *actual* quantity of inputs used and those *allowed at standard* to make a unit of output.
The general model shows how a total variance is divided between price and efficiency.
REASONS FOR MATERIALS VARIANCES

Materials price variances occur because of:
- Failure to take purchase discounts
- Using a better (worse) grade of raw materials than expected
- Changes in market supply/demand for raw material affecting prices

Materials efficiency variances occur when:
- Allowance is not made for defects, inexperienced workers
REASONS FOR DIRECT LABOR VARIANCES

- Direct labor price (wage) variances occur because of:
  - Changes in labor wage rates not incorporated into budget
- Direct labor efficiency variances occur when:
  - Workers are poorly motivated and trained
  - Poor materials
  - Faulty equipment
  - Poor supervision
  - Scheduling
OVERHEAD PRICE and EFFICIENCY VARIANCES

**Variable overhead price variance** results when the cost per machine hour is more/less than the standard allowed.

**Variable overhead efficiency variance** results if machine hours required to make the actual production output exceed the standard machine hours allowed to make that output.
Fixed manufacturing cost variances are applied at predetermined rates. Full absorption costing requires incorporating fixed costs into unit cost of items being manufactured.
APPLIED FIXED MANUFACTURING COST

Cost per unit:
Applied fixed manufacturing cost per unit =

Budgeted fixed manufacturing cost per period
Estimated production volume per period

= $32,200 / 70,000 units

= $0.46 per unit

Applied = $0.46 per unit X 80,000 units

= $36,800
PRICE VARIANCE and PRODUCTION VOLUME VARIANCE

Price variance =

Actual fixed manufacturing costs
– Budgeted fixed manufacturing costs

Production volume variance =

Budgeted fixed manufacturing costs
- Applied fixed manufacturing costs
Is variance analysis used with activity-based costing?

**YES!** Variance analysis is computed on price and efficiency for each activity driver.
Variance analysis is applied differently in high technology companies because computerized equipment is substituted for direct labor. Therefore, these companies should treat labor as a fixed cost.
Management should create a decision rule for conducting a variance investigation. Investigations should be conducted on a cost-benefit basis. Quality should be allowed to vary within preset tolerance limits.
Predetermined tolerance limits allow managers to identify conditions that should be investigated.
WORKER INVOLVEMENT: Benefits

- Commitment improves and goals increase when workers have decision-making authority.
- When workers can make decisions, the company is closer to customers.
- Giving decision-making responsibility to workers uses their skills and knowledge and provides motivation to develop further.
WORKER INVOLVEMENT: Challenges

- Management must create a system that conveys organization goals and critical success to all members.
- Determining measures to determine success may not be as easy and must ensure:
  - Promoting desired behavior
  - Comprehensive measures
  - Supporting organization goals
  - Reflecting unit’s role in organization
- Performance measures must be applied consistently and accurately.
MIX VARIANCE

Most organizations use multiple inputs to produce their output.

For example, Massachusetts General Hospital uses a combination of registered nurses, licensed practical nurses, and nurse’s aides to provide nursing care to patients. Bethlehem Steel Company uses a combination of iron ore and other raw materials to make its product.

A **mix variance** shows the impact on profits of using something other than the budgeted mix of inputs.
The general model for a mix variance is:

\[
\text{Standard Price of the Inputs } \times \text{Actual Proportions of the Actual Total Quantity } \times \text{Actual Total Quantity of Inputs} - \text{Standard Price of the Inputs } \times \text{Standard Proportions of the Actual Total Quantity } \times \text{Actual Total Quantity of Inputs}
\]
We call the portion of the efficiency variance that is not a mix variance a **yield variance**.

The yield variance measures the input-output relation holding the standard mix of inputs constant.