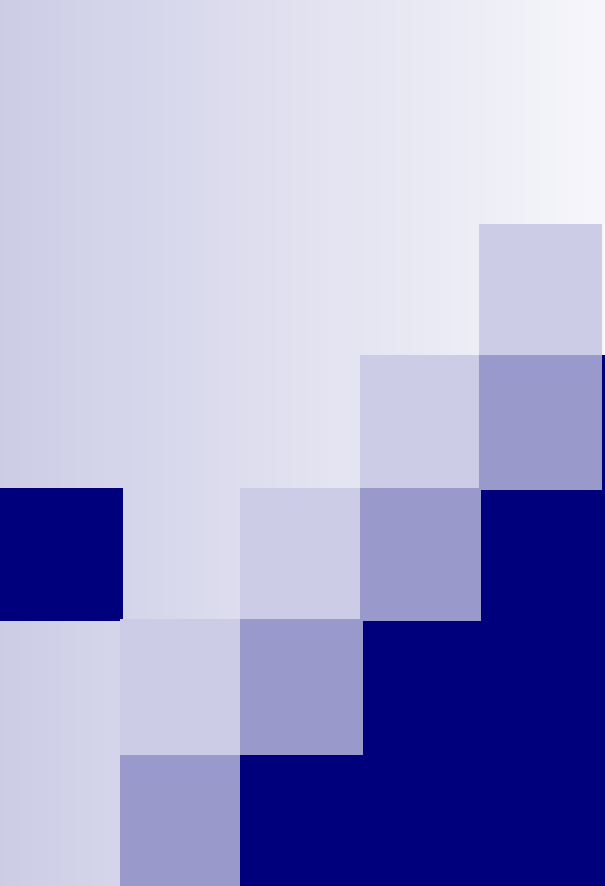




MASTER BUDGET

Chapter 6



Budget

- **Budget** is a quantitative expression for a set time period of proposed future plan of action by management.
- It can cover both financial and nonfinancial aspects of these plans and acts as a blueprint for the company to follow in the upcoming period.

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- Budgets covering the financial aspects quantify management's expectations regarding future income, cash flows, and financial position.
 - Just as individual financial statements are prepared covering past periods, so they can be prepared covering future periods—for example, a budgeted income statement, a budgeted cash flow statement, and a budgeted balance sheet.



Well-managed organizations usually have the following budgeting cycle:

1. Planning the organization as a whole as well as of its subunits. The entire management team agrees as to what is expected.
2. Providing a frame of reference, a set of specific expectations against which actual results can be compared.

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3. Investigating variations from plans. If necessary, corrective action follows investigation.
 4. Planning again, considering feedback and changed conditions.



Master budget

- **Master budget** coordinates all the financial projections in the organization's individual budgets in a single organizationwide set of budgets for a set time period.
- It embraces the impact of both *operating* decisions and *financing* decisions.

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- Operating decisions center on the acquisition and use of scarce resources.
 - Financing decisions center on how to get the funds to acquire resources.



Pro forma statements

- The terminology used to describe budgets varies among organizations.
- For example, budgeted financial statements are sometimes called **pro forma statements**.

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- The budgeted financial statements of many companies include the budgeted income statement, the budgeted balance sheet, and the budgeted statement of cash flows.



Coordination

- *Coordination* is the meshing and balancing of all factors of production or service and of all the departments and business functions so that the company can meet its objectives.



Communication

- *Communication* is getting those objectives understood and accepted by all departments and functions.

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- Coordination forces executives to think of relationships among individual operations, departments, and the company as a whole.
 - Coordination implies, for example, that purchasing officers make material purchase plans on the basis of production requirements.
 - Also, production managers plan personnel and machinery needs to produce the number of products necessary to meet revenue forecasts.

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- For coordination to succeed, communication is essential.
 - The production manager must know the sales plan.
 - The purchasing manager must know the production plan, and so on.
 - Having a formal document such as the budget is an effective way to communicate a consistent set of plans to the organization as a whole.

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- Budgets should not be administered rapidly.
 - Changing conditions call for changes in plans.
 - A manager may commit to the budget, but a situation might develop where some special repairs or a special advertising program would better serve the interests of the organization.
 - The manager should not defer the repairs or the advertising in order to meet the budget if such actions will hurt the organization in the long run. Attaining the budget should not be an end in itself.

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- The most frequently used budget period is one year.
 - The annual budget is often subdivided by months for the first quarter and by quarters for the remainder of the year.
 - The budgeted data for a year are frequently revised as the year unfolds.
 - For example, at the end of the first quarter, the budget for the next three quarters is changed in light of new information.



Rolling budget

- Businesses are increasingly using *rolling budgets*.
- **Rolling budget** is a budget or plan that is always available for a specified future period by adding a month, quarter, or year in the future as the month, quarter, or year just ended is dropped.

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- Thus, a 12-month rolling budget for the March 2000 to February 2001 period becomes a 12-month rolling budget for the April 2000 to March 2001 period the next month, and so on.
 - There is always a 12-month budget in place.
 - Companies also frequently use rolling budgets when developing five-year budgets for long-run planning.

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- Halifax Engineering is a machine shop that uses skilled labor and metal alloys to manufacture two types of aircraft replacement parts- Regular and Heavy Duty.
 - Halifax manager is ready to prepare a master budget for the year 2000.
 - To keep our illustration manageable for clarifying basic relationships, we make the following assumptions:

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1. The only source of revenue is sales of two parts. Non-sales-related revenue, such as interest income, is assumed to be zero.
 2. Work-in-process inventory is negligible and is ignored.
 3. Direct material inventory and finished goods inventory are costed using the FIFO method.

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4. Unit costs of direct materials purchased and finished goods sold remain unchanged throughout the budget year (2000).
 5. Variable production costs are variable with respect to direct manufacturing labor-hours. Variable nonproduction costs are variable with respect to the revenues.
 6. For computing inventoriable costs, all manufacturing costs (fixed and variable) are allocated using a single allocation base—direct manufacturing labor-hours.



After carefully examining all relevant factors, the executives of Halifax Engineering forecast the following figures for 2000:

- Direct materials:

- Material 111 alloy \$7 per kilogram
 - Material 112 alloy \$10 per kilogram

- Direct manufacturing labor \$20 per hour



Content of Product Unit	Regular	Heavy-Duty
111 Alloy	12 kg	12 kg
112 Alloy	6 kg	8 kg
Direct manufacturing labor	4 h	6 h

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- All direct manufacturing costs are variable with respect to the units of output produced. Additional information regarding the year 2000 is as follows:

	Regular	Heavy-Duty
Expected sales in units	5,000	1,000
Selling price per unit	\$600	\$800
Target ending inventory in units	1,100	50
Beginning inventory in units	100	50
Beginning inventory in dollars	\$38,400	\$26,200



	111 Alloy	112 Alloy
Beg. inventory in kg	7,000	6,000
Target end. inventory in kg.	8,000	2,000

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- At the anticipated output levels for the Regular and Heavy Duty aircraft parts, management believes the following manufacturing overhead costs will be incurred:

Manufacturing overhead costs	
Variable	\$780,000
Fixed	\$420,000
Other costs	
Variable	475,000
Fixed	395,000

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- **Our task is to prepare a budgeted income statement for the year 2000.**



STEPS IN PREPARING AN OPERATING BUDGET

Step 1: Revenue Budget

Schedule 1: Revenue Budget
For the Year Ended December 31, 2000

	Units	Selling Price	Total Reven ues
Regula r	?	?	?
Heavy- Duty	?	?	?
<i>Total</i>			?



Schedule 1: Revenue Budget

For the Year Ended December 31, 2000

	Units	Selling Price	Total Revenues
Regular	5,000	\$600	\$3,000,000
Heavy-Duty	1,000	800	800,000
<i>Total</i>			<i>\$3,800,000</i>

Step 2: Production Budget (in Units)

$$\begin{array}{l} \text{Budgeted} \\ \text{Production} \\ \text{(units)} \end{array} = \begin{array}{l} \text{Budgeted sales} \\ \text{(units)} \end{array} + \begin{array}{l} \text{Targeted} \\ \text{ending} \\ \text{finished} \\ \text{goods} \\ \text{inventory} \\ \text{(units)} \end{array} - \begin{array}{l} \text{Beginning} \\ \text{finished} \\ \text{goods} \\ \text{inventory} \\ \text{(units)} \end{array}$$

Schedule 2: Production Budget (in Units)

For the Year Ended December 31, 2000

	Product	
	Regular	Heavy-Duty
Budgeted sales (schedule 1)	?	?
Add: Target ending finished goods inventory	?	?
Total requirements	?	?
Deduct: Beginning finished goods inventory	?	?
Units to be produced	?	?

Schedule 2: Production Budget (in Units)

For the Year Ended December 31, 2000

	Product	
	Regular	Heavy-Duty
Budgeted sales (schedule 1)	5,000	1,000
Add: Target ending finished goods inventory	1,100	50
Total requirements	6,100	1,050
Deduct: Beginning finished goods inventory	100	50
<i>Units to be produced</i>	<i>6,000</i>	<i>1,000</i>



Step 3: Direct Materials Usage Budget and Direct Materials Purchase Budget

Schedule 3A:

Direct Materials Usage Budget in
Kilograms and Dollars

For the Year Ended December 31, 2000

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used in production of Regular parts (see schedule 2)	?	?
Direct materials to be used in production of Heavy- Duty parts (see schedule 2)	?	?
Total direct	?	?

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used from beginning inventory (under FIFO)	?	?
Multiply by: Cost per kilogram of beginning inventory	?	?
Cost of direct materials to be	?	?

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used from purchases	?	?
Multiply by: Cost per kilogram of purchased materials	?	?
Cost of direct materials to be used from purchases: (b)	?	?

Schedule 3A:
Direct Materials Usage Budget in
Kilograms and Dollars
For the Year Ended December 31, 2000

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used in production of Regular parts (see schedule 2)	72,000	36,000
Direct materials to be used in production of Heavy- Duty parts (see schedule 2)	12,000	8,000
Total direct	84,000	44,000

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used from beginning inventory (under FIFO)	7,000	6,000
Multiply by: Cost per kilogram of beginning inventory	\$7	\$10
Cost of direct materials to be	\$49,000	\$60,000

	Materials	
	111 Alloy	112 Alloy
Direct materials to be used from purchases	77,000	38,000
Multiply by: Cost per kilogram of purchased materials	\$7	\$10
Cost of direct materials to be used from purchases: (b)	\$539,000	\$380,000


$$\begin{array}{rclcl} \text{Purchase} & = & \text{Usage} & + & \text{Target} & - & \text{Beginni} \\ \text{s of} & & \text{of direct} & & \text{ending} & & \text{ng} \\ \text{direct} & & \text{material} & & \text{inventory of} & & \text{inventor} \\ \text{materials} & & \text{s} & & \text{direct} & & \text{y of} \\ & & & & \text{materials} & & \text{direct} \\ & & & & & & \text{material} \\ & & & & & & \text{s} \end{array}$$

Schedule 3B:
Direct Materials Purchases Budget
For the Year Ended December 31, 2000

	Material	
	111 Alloy	112 Alloy
Direct materials to be used in production (in kilograms) from schedule 3A	?	?
Add: Target ending direct materials inventory (in kilograms)	?	?
Total requirements (in kilogram)	?	?

	Material	
	111 Alloy	112 Alloy
Total requirements (in kilogram)	?	?
Deduct: Beginning direct materials inventory (in kilograms)	?	?
Direct materials to be purchased (in kilograms)	?	?

	Material	
	111 Alloy	112 Alloy
Direct materials to be purchased (in kilograms)	?	?
Multiply by: Cost per kilogram of purchased materials	?	?
<i>Total direct materials purchase costs</i>	?	?

	Material	
	111 Alloy	112 Alloy
Direct materials to be used in production (in kilograms) from schedule 3A	84,000	44,000
Add: Target ending direct materials inventory (in kilograms)	8,000	2,000
Total requirements (in kilogram)	92,000	46,000

	Material	
	111 Alloy	112 Alloy
Total requirements (in kilogram)	92,000	46,000
Deduct: Beginning direct materials inventory (in kilograms)	7,000	6,000
Direct materials to be purchased (in kilograms)	85,000	40,000

	Material	
	111 Alloy	112 Alloy
Direct materials to be purchased (in kilograms)	85,000	40,000
Multiply by: Cost per kilogram of purchased materials	\$7	\$10
<i>Total direct materials purchase costs</i>	<i>\$595,000</i>	<i>\$400,000</i>

Step 4: Direct Manufacturing Labor Budget
Schedule 4: Direct Manufacturing Labor
Budget
For the Year Ended December 31, 2000

	Out put Unit s Prod uced (sch edul e2)	Dire ct Man ufac turi ng Lab or- Hou rs per Unit	Tota l Hou rs	Hou rly Wag e rate	Tota l
Regu lar	?	?	?	?	?
UD	?	?	?	?	?

	Output Units Produc ed (sched ule2)	Direct Manuf acturin g Labor- Hours per Unit	Total Hours	Hourly Wage rate	Total
Regular	6,000	4	24,000	\$20	\$480,000
HD	1,000	6	6,000	20	120,000
<i>Total</i>			<i>30,000</i>		<i>\$600,000</i>

Step 5: Manufacturing Overhead Budget
Schedule 5: Manufacturing Overhead Budget
For the Year Ended December 31, 2000

	At Budgeted Level of 30,000 Direct Manufacturing Labor- Hours
Variable manufacturing overhead costs	?
Fixed Manufacturing overhead costs	?
<i>Total manufacturing overhead costs</i>	?

	At Budgeted Level of 30,000 Direct Manufacturing Labor- Hours
Variable manufacturing overhead costs	\$780,000
Fixed Manufacturing overhead costs	420,000
<i>Total manufacturing overhead costs</i>	<i>\$1,200,000</i>

Step 6: Ending Inventory Budget
Schedule 6A:
Computation of Unit Costs of
Manufacturing Finished Goods in 2000

	Cost per Unit of Input	Product			
		Regular		Heavy- Duty	
		Inputs	Amount	Inputs	Amount
111 Alloy	?	?	?	?	?
112 Alloy	?	?	?	?	?
Direct Manufacturing Labor	?	?	?	?	?
Manufacturing Overhead	?	?	?	?	?
<i>Total</i>			?		?

	Cost per Unit of Input	Product			
		Regular		Heavy- Duty	
		Inputs	Amount	Inputs	Amount
111 Alloy	\$ 7	12	\$ 84	12	\$ 84
112 Alloy	10	6	60	8	80
Direct Manufacturing Labor	20	4	80	6	120
Manufacturing Overhead	40	4	160	6	240
<i>Total</i>			<i>\$384</i>		<i>\$524</i>

Schedule 6B:
Ending Inventory Budget
December 31, 2000

	Kg	Cost per Kg	Total	
Direct materials				
111 alloy	?	?	?	
112 alloy	?	?	?	?
Finished goods	Unit	Cost per Unit		
Regular	?	?	?	
HD	?	?	?	?
<i>Total End Inv</i>				?

	Kg	Cost per Kg	Total	
Direct materials				
111 alloy	8,000	\$ 7	\$56,000	
112 alloy	2,000	10	20,000	\$76,000
Finished goods	Unit	Cost per Unit		
Regular	1,100	\$384	\$422,400	
HD	50	524	26,200	\$448,600
<i>Total End Inv</i>				<i>\$524,600</i>

Step 7: Cost of Goods Sold Budget
Schedule 7: Cost of Goods Sold Budget
For the Year Ended December 31, 2000

	From Sched ule	Total (\$)
Beginning finished goods inventory, January 1, 2000	Given	64,600
Cost of goods manufactured	6A	?
Cost of goods available for sale		?
Deduct: Ending finished goods inventory, December 31, 2000	6B	?

	From Sched ule	Total (\$)
Beginning finished goods inventory, January 1, 2000	Given	64,600
Cost of goods manufactured	6A	2,828, 000
Cost of goods available for sale		2,892, 600
Deduct: Ending finished goods inventory, December 31, 2000	6B	448,60 0



Step 8: Other (Nonproduction) Costs **Budget**

Schedule 8:

Other (Nonproduction) Costs Budget
For the Year Ended December 31, 2000

Variable Costs	?
Fixed Costs	?
<i>Total Costs</i>	?



Variable Costs	\$475,000
Fixed Costs	395,000
<i>Total Costs</i>	<i>\$870,000</i>

**Halifax Engineering
Budgeted Income Statement
For the Year Ended December 31, 2000**



Revenues	Schedule ?	?
COGS	Schedule ?	?
Gross Margin		?
Operating Costs	Schedule ?	?
<i>Operating Income</i>		?



Revenues	Schedule 1	\$3,800,000
COGS	Schedule 7	2,444,000
Gross Margin		1,356,000
Operating Costs	Schedule 8	870,000
<i>Operating Income</i>		<i>\$486,000</i>