Preparation of Master Budget (Manufacturing Company)

Example (2) Great Company manufactures and sells a product whose peak sales occur in the third quarter. Management is now preparing detailed budgets for 2013- the coming year and has assembled the following information to assist in the budget preparation:

1) The company's product selling price is Br. 20 per unit. The marketing department has estimated sales as follows for the next six quarters.

	20x4 Quarters			20x5 Quarters	
	1	2	3	4	1	2
Budgeted sales in units	10, 000	30,000	40, 000	20, 000	15, 000	15, 000

2) Sales are collected in the following pattern: 70% of sales are collected in the quarter in which the sales are made and the remaining 30% are collected in the following quarter. On January1, 2013, the company's balance sheet showed Br.90, 000 in account receivable, all of which will be collected in the first quarter of the year. Bad debts are negligible and can be ignored.
3) The company maintains an ending inventory of finished units equal to 20% of the next quarter's sales. The requirement was met on December 31, 2012, in that the company had 2, 000 units on hand to start the New Year.
4) Fifteen pounds of raw materials are needed to complete one unit of product. The company requires an ending inventory of raw materials on hand at the end of each quarter equal to 10% of the following quarter's production needs of raw materials. This requirement was met on December 31, 2012 in that the company had 21, 000 pounds of raw materials to start the New Year.
5) The raw material costs Br.0.20 per pound. Raw material purchases are paid for in the following pattern: 50% paid in the quarter the purchases are made, and the remainder is paid in the following quarter. On January 1,2013, the

company's balance sheet showed Br.25, 800 in accounts payable for raw material purchases, all of which be paid for in the first quarter of the year.

6) Each unit of Great's product requires 0.8 hour of labor time. Estimated direct labor cost per hour is Br.7.50.

7) Variable overhead is allocated to production using labor hours as the allocation base as follows:

Indirect materials	Br.0.40
Indirect labor	0.75
Fringe benefits	0.25
Payroll taxes	0.10
Utilities	0.15
Maintenance	0.35

Fixed overhead for each quarter was budgeted at Br. 60, 600. Of the fixed overhead amount,

Br. 15, 000 each quarter is depreciation. Overhead expenses are paid as incurred.

8) The company's quarterly budgeted fixed selling and administrative expenses are as follows:

	2013 Quarters			
	1	2	3	4
Advertising	Br.20, 000	Br.20, 000	Br.20, 000	Br.20, 000
Executive salaries	55, 000	55, 000	55, 000	55, 000
Insurance	-	1, 900	37,750	-
Property taxes	-	-	-	18, 150
Depreciation	10, 000	10, 000	10, 000	10, 000

The only variable selling and administrative expense, sales commission, is budgeted at Br.1.80 per unit of the budgeted sales. All selling and

administrative expenses are paid during the quarter, in cash, with exception of depreciation. New equipment purchases will be made during each quarter of the budget year for Br. 50, 000, Br. 40, 000, & Br.20, 000 each for the last two quarter in cash, respectively. The company declares and pays dividends of Br.8, 000 cash each quarter. The company's balance sheet at December 31, 2012 is presented below:

ASSETS

Current assets:		
Cash	Br. 42, 500	
Accounts Receivable	90, 000	
Raw Materials Inventory (21, 000 pounds)	4, 200	
Finished Goods Inventory (2, 000 units)	26, 000	
Total current assets		Br.162, 7 00
Plant and Equipment:		
Land	Br.80, 000	
Building and Equipment	700, 000	
Accumulated Depreciation	(292, 000)	
Plant and Equipment, net		488, 000
Total assets		Br.650, 700

Liabilities and Stockholders' Equity

Current liabilities:		
Accounts payable (raw materials)		Br.25, 800
Stockholders' equity:		
Common stock, no par	Br.175, 000	
Retained earnings	449, 900	
Total stockholders' equity		624, 900
Total liabilities and stockholders' equity		Br.650, 700

The company can borrow money from its bank at 10% annual interest. All borrowing must be done at the beginning of a quarter, and repayments must be made at the end of a quarter. All borrowings and all repayments are in multiples of Br. 1,000.

The company requires a minimum cash balance of Br.40, 000 at the end of each quarter. Interest is computed and paid on the principal being repaid only at the time of repayment of principal. The company whishes to use any excess cash to pay loans off as rapidly as possible.

Instructions: Prepare a master budget for the four-quarter period ending December 31. Include the following detailed budget and schedules:

1. a) A sales budget, by quarter and in total
   b) A schedule of budgeted cash collections, by quarter and in total
   c) A production budget
   d) A direct materials purchase budget
   e) A schedule of budgeted cash payments for purchases by quarter and in total
   f) A direct labor budget
   g) A manufacturing overhead budget
   h) Ending finished goods inventory budget
   i) A selling and administrative budget
2. A cash budget, by quarter and in total
3. A budgeted income statement for the four- quarter ending December 31, 2013
4. A budgeted balance sheet as of December 31, 2013.

1. a) Sales Budget

	Quarter			
	1	2	3	4
Expected sales in units	10, 000	30, 000	40, 000	20, 000
Selling price per unit	x Br. 20	x Br. 20	x Br.20	x Br.20
Total sales	Br.200, 000	Br.600,	Br.800,	Br.400,

		000	000	000

b) Schedule of Expected Cash Collections

	Quarter				
	1	2	3	4	Total
30% of the previous quarter sales	Br. 90, 000	Br.60, 000	Br.180, 000	Br.240, 000	Br.570, 000
70% of the current quarter sales	140, 000	420, 000	560, 000	280, 000	1, 400, 000
Total collections	Br.230, 000	Br.480, 000	Br.740, 000	Br. 520, 000	Br.1, 970, 000

c) **Production Budget**

After the sales budget has been prepared, the production requirements for the forth-coming budget period can be determined and organized in the form of a production budget. Sufficient goods will have to be available to meet sales and provide for the desired ending inventory. A portion of these goods will already exist in the form of a beginning inventory. The remainder will have to be produced. Therefore, production needs can be determined as follows:

Budgeted sales in units xxxx
Add desired ending inventory..... xxxx
Total needs..... xxxx
Less beginning inventory..... xxxx
Required production..... .xxxx

The schedule given below shows the production budget for Great Company. Note that the desired level of the ending inventory influences production requirements for a quarter. Inventories should be carefully planned. Excessive inventories tie up funds and create storage problems. Insufficient inventories can lead to lost sales or crash production efforts in the following period

	Quarter	Total

Expected sales(units)	10, 000	30, 000	40, 000	20, 000	100, 000
Add: Desired Ending Inventory	6, 000	8, 000	4, 000	3, 000	3, 000
Total needs	16, 000	38, 000	44, 000	23, 000	103, 000
Lees: Beginning Inventory	2, 000	6, 000	8, 000	4, 000	2, 000
Units to be produced	14, 000	32,000	36, 000	19, 000	101, 000
	1	2	3	4	

d) Direct Materials Budget

Returning to Great Company's budget data, after the production requirements have been computed, a direct materials budget can be prepared. The direct materials budget details the raw materials that must be purchased to fulfill the production budget and to provide for adequate inventories. The required purchases of raw materials are computed as follows:

Raw materials needed to meet the production schedule……xxxx

Add desired ending inventory of raw materials……xxxx

Total raw materials needs…… .xxxx

Less beginning inventory of raw materials…… xxxx

Raw materials to be purchased…… .xxxx

	Quarter				Total
	1	2	3	4	
Production needs(pounds)	210, 000	480, 000	540, 000	285, 000	1, 515, 000
Add: Desired ending	48, 000	54, 000	28,	22,	22, 500

inventory			500	500	
Total needs	258, 000	534, 000	568, 500	307, 500	1, 537, 500
Less: Beginning inventory	21, 000	48, 000	54, 000	28, 500	21, 000
Raw materials to be purchased(pounds)	237, 000	486, 000	514, 500	279, 000	1, 516,500

Raw Materials to be purchased (in birrs)

	1	2	3	4	Total
Raw materials to be purchased	237, 000	486, 000	514, 500	279, 000	1, 516, 500
Raw materials cost per pound	x Br.0.20	x Br.0.20	x Br.0.20	x Br.0.20	x Br.0.20
Total	Br.47, 400	Br.97, 200	Br.102, 900	Br.55, 800	Br.303, 300

e) **Schedule of Expected Cash Disbursements (for Materials Purchase)**

	Quarter				Total
	1	2	3	4	
50% of the previous quarter	Br. 25, 800	Br.23, 700	Br.48, 600	Br.51, 450	Br.149, 550
50% of the current quarter	23, 700	48, 600	51, 450	27, 900	151, 650
Total cash disbursement	Br.49, 500	Br.72, 300	Br.101, 050	Br.79, 350	Br.301, 200

f) **Direct Labor Budget**

The direct labor budget is also developed from the production budget. Direct labor requirements must be computed so that the company will know whether sufficient labor time is available to meet production needs. By knowing in advance just what will be needed in the way of labor time throughout the budget year, the company can develop

plans to adjust the labor force as the situation may require. Firms that neglect to budget run the risk of facing labor shortage or having to hire and lay off at awkward times. Erratic labor policies lead to insecurity and inefficiencies on the part of employees. To compute direct labor requirements, the number of units of finished product to be produced each produced each period (month, quarter, and so on) is multiplied by the number of direct labor-hours required to produced a single unit. Many different types of labor may be involved. If so, then the computation should be by type of labor needed. The labor requirements can then be translated into expected direct labor costs. How this is done will depend on the labor policy of the firm. In schedule given below, the management of Great Company has assumed that the direct labor force will be adjusted as the work requirement change from quarter to quarter (for example as units produced changes from l4, 000 units in quarter 1 to 32, 000 units in quarter 2 for Great Company, the direct labor work force will be fully adjusted to the workload, i.e., total hours of direct labor time needed) . In that case, the total direct labor cost is computed by simply multiplying the direct labor-hour required by the direct labor rate hour as was done in the schedule here under.

	Quarter				Total
	1	2	3	4	
Direct labor time needed	11, 200	25, 600	28, 800	15, 200	80, 800
Direct labor cost per hour	x Br.7.50	x Br.7.50	x Br.7.50	x Br.7.50	x Br.7.50
Total direct labor cost	Br.84, 000	Br.192, 000	Br.216, 000	Br.114, 000	Br.606, 000

g) Manufacturing Overhead (MOH) Budget

The manufacturing overhead budget provides a schedule of all costs of production other than direct materials and direct labor. These costs should be broken down by cost behavior for budgeting purposes and a predetermined overhead rate

developed. This rate will be used to apply manufacturing overhead to units of product throughout the budget period.

A computation showing budgeted cash disbursement for manufacturing overhead should be made for use in developing the cash budget. Since some of the overhead costs do not represent cash outflows, the total budgeted manufacturing overhead costs must be adjusted to determine the cash disbursement for manufacturing overhead. At Great Company, the only significant noncash manufacturing overhead cost is depreciation. Any depreciation charges included in manufacturing overhead must be deducted from the total in computing expected cash payments, since depreciation is a noncash charge.

	Quarter				Total
	1	2	3	4	
Variable overhead	Br.22, 400	Br.51, 200	Br.57, 600	Br.30, 400	Br.161,600
Fixed overhead	60, 600	60, 600	60, 600	60, 600	242,400
Total MOH	Br.83, 000	Br.111, 800	Br.118, 200	Br.91, 000	Br.404,000
Less: Depreciation	15, 000	15, 000	15, 000	15, 000	60, 000
Cash disbursements for MOH	Br.68, 000	Br.96, 800	Br.103, 200	Br.76, 000	Br.344, 000

h) Ending Finished Goods Inventory Budget

After completing schedules (a) to (g), the company had all of the data needed to compute unit product costs. This computation was needed for two reasons: first, to know how much to charge as cost of goods sold on the budgeted income statement; and second, to know what amount to put on the balance sheet inventory account for unsold units. The carrying cost of the unsold units is computed on the ending finished goods inventory budget

Budgeted Finished Goods Inventory	3, 000
Unit product cost	Br.13

Ending Finished Goods Inventory in birrs Br.39, 000

Production cost per unit

	Quantity (unit)	**Cost**	**Total**
Direct materials	15 pounds	Br.0.20 per pound	Br.3
Direct labor	0.8 hours	7.50 per hour	6
Manufacturing overhead	0.8 hours	5.00 per hour	4
Unit product cost			Br.13

MOH rate= Total MOH = 404, 000 = Br.5.00

Direct labor hours 80, 800

i) Selling and Administrative Expenses Budget

	Quarter				Total
	1	2	3	4	
Variable selling expenses	Br.18, 000	Br.54, 000	Br.72, 000	Br.36, 000	Br.180, 000
Fixed selling & administrative expenses					
Advertising	20, 000	20, 000	20, 000	20, 000	80, 000
Executive salaries	55, 000	55, 000	55, 000	55, 000	220, 000
Insurance	-	1, 900	37, 750	-	39, 650
Property taxes	-	-	-	18,150	18,150
Depreciation	10, 000	10, 000	10, 000	10, 000	40, 000
Total budgeted selling & administrative expenses	Br.103, 000	Br.140, 900	Br.194, 750	Br.139, 150	Br.577, 800

Disbursement for Selling & Administrative Expenses

	Quarter				Total
	1	2	3	4	
Budgeted Selling & Administrative	Br.103, 000	Br.140, 900	Br.194, 750	Br.139, 150	Br.577, 800
Less: Depreciation	10, 000	10, 000	10, 000	10, 000	40, 000
Total Cash	Br.93,	Br.130,	Br.184,	Br.129,	Br.537,

Disbursements	000	900	750	150	800

2. a) Cash Budget

	Quarter				Total
	1	2	3	4	
Cash balance, beginning	Br.42, 500	Br.40, 000	Br.40, 000	Br.40, 500	Br.42, 500
Add : Collection from customers	230, 000	480, 000	740, 000	520, 000	1, 970, 000
Total cash available before financing	**272, 500**	**520, 000**	**780, 000**	**560, 500**	**2, 012, 500**
Less: Disbursements for					
Direct materials	49, 500	72, 300	100,050	79, 350	301,200
Direct labor	84, 000	192, 000	216,000	114, 000	606,000
Manufacturing overhead	68, 000	96, 800	103,200	76, 000	344,000
Selling & Administrative	93, 000	130, 900	184,750	129, 150	537,800
Equipment purchases	50, 000	40, 000	20,000	20,000	130,000
Dividend	8, 000	8, 000	8, 000	8, 000	32,000
Total disbursements	352, 500	540,000	632,000	426,500	1,951,000
Minimum cash balance	40, 000	40, 000	40, 000	40, 000	40, 000
Total need	392, 500	580, 000	672, 000	466, 500	1, 991,000
Excess (deficiency) of cash available over total need	(120, 000)	(60, 000)	108, 000	94, 000	21, 500
Financing:					
Borrowing(at beginning)	120,000	60, 000	-	-	180, 000
Repayments(at ending)	-	-	(100, 000)	(80,000)	(180,000)
Interest(at 10% per annum)	-	-	(7,500)	(6,500)	(14,000)
Total financing	120, 000	60, 000	(107,500)	(86,500)	(14,000)
Cash balance, ending	**Br.40,000**	**Br.40, 000**	**Br.40, 500**	**Br.47, 500**	**Br.47, 500**

b) Budgeted Income Statement

Great Company

Budgeted Income Statement

For the Year Ended December31, 2013

Sales [100, 000units at Br.20 Schedule 1(a)]	Br.2, 000, 000
Cost of Goods Sold [100, 000 units at Br.13 Schedule1 (h)]	1, 300, 000
Gross Margin	700, 000
Selling & Administrative Expenses [Schedule 1 (i)]	577, 800
Net Operating Income	122, 200
Interest Expense [Schedule 2(a)]	14, 000
Net Income	**Br. 108, 200**

c) Budgeted Balance Sheet

Great Company
Budgeted Balance Sheet
December31, 2013

ASSETS		
Current assets:		
Cash [Schedule 2(a)]	Br. 47, 500	
Accounts Receivable	120, 000	
Raw Materials Inventory	4, 500	
Finished Goods Inventory	39, 000	
Total current assets		Br.211, 000
Plant and Equipment:		
Land	Br.80, 000	
Building and Equipment	830, 000	
Accumulated Depreciation	(392, 000)	
Plant and Equipment, net		518, 000

Total assets		Br.729, 000
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable (raw materials)		Br.27, 900
Stockholders' equity:		
Common stock, no par	Br.175, 000	
Retained earnings	526, 100	
Total stockholders' equity		701, 100
Total liabilities and stockholders' equity		Br.729, 000