

**LEADSTAR COLLEGE OF MANAGEMENT AND LEADERSHIP FACULTY OF
BUSINESS AND LEADERSHIP**

Managerial Accounting ASSIGNMENT

MBA-511



ETSEGENET GETACHEW

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1. Gafat Engineering Ethio Plc manufactures two types of TV sets - LCD and CRT - both having only one model. The LCD and CRT television sets sell for Br 9,000 and Br5,000, respectively. The company sells its products through its own stores and other outlets. Total fixed expenses are Br15,000,000 per month. Variable expenses and monthly sales data are given below:

	<u>LCD</u>	<u>CRT</u>
Variable expenses	Br5,000	Br2,000
Monthly sales in units	2,000	3,000

Required: (unless stated figures should be computed for one month)

a) Determine breakeven total volume of sales and sales volume for each product.

Items	SP	VC	UCM(sp-vc)	Msu	%of total	WAUCM(Ucm*%)
LCD	9000	5000	4000	2000	40%	1600
CRT	5000	2000	3000	3000	60%	1800
Total Unit				5000	100%	3400

$$\begin{aligned} \text{BEP Unit} &= \frac{\text{TFC}}{\text{WACM}} \\ &= \frac{15,000,000}{3400} = 4411.7 = \underline{4412} \end{aligned}$$

Description	BEP Sales	% of Total	Individual sale
LCD	4412	40%	1764.8
CRT	4412	60%	2647.20
			4412

b) Determine sales volume and sales revenue for the company to earn Br500,000 profit after 30% profit tax.

Target Profit = 5000, Tax Rate = 30%
Required Sales Volume and Sales Revenue

$$\begin{aligned} \text{After Tax Target Profit} &= \frac{\text{Target Profit}}{1 - \text{Tax Rate}} \\ &= \frac{5000}{1 - 30\%} = \frac{5000}{0.7} = \underline{714,286} \end{aligned}$$

$$\begin{aligned} \text{Target Volume Unit Sale} &= \frac{\text{TFC} + \text{After Tax Target Profit}}{\text{WACM}} \\ &= \frac{15,000,000 + 714,286}{3400} = \underline{4622 \text{ Unit}} \end{aligned}$$

$$\begin{aligned}\text{WACM Sales} &= \Sigma \text{MiUSPi} = (9000 \times 40\%) + (5000 \times 60\%) \\ &= 3600 + 3000 = \underline{6600 \text{ birr}}\end{aligned}$$

$$\begin{aligned}\text{WACM Ratio} &= \frac{\text{WACM Unit}}{\text{WACM Sale}} = \frac{3400}{6600} \\ &= 0.515 = \underline{51.5\%}\end{aligned}$$

$$\begin{aligned}\text{Target Sales Revenue} &= \frac{\text{TFC} + \text{After Tax Target Profit}}{\text{WACM Ratio}} \\ &= \frac{15,000,000 + 714,286}{0.515} = \underline{30,513,177}\end{aligned}$$

c) The company has planned to incur Br 200,000 monthly selling (promotional) expenses to increase sales volume for its LCD TV sets to 4,000. If the plan materializes and other things remain constant, determine breakeven sales volume and sales revenue for the company.

$$\text{Promotional Expense} = 200,000 \quad \text{Sales Volume} = 4000$$

Item	Selling Price	Variable Cost	MSU	%Of Total
LCD	9000	5000	4000	57%
CRT	5000	2000	3000	43%
Total Unit			7000	100%

$$\begin{aligned}\text{WAUCM} &= \text{UCM} \times \text{LCD\%} + \text{UCM} \times \text{CRT\%} \\ &= 4000 \times 57\% + 3000 \times 43\% \\ &= 2280 + 1290 = \underline{3570}\end{aligned}$$

$$\begin{aligned}\text{BE Volume Unit} &= \frac{\text{TFC}}{\text{WAUCM}} = \frac{15,000,000}{3570} = \underline{4202}\end{aligned}$$

$$\begin{aligned}\text{WACMSP} &= 9000 \times 57\% + 5000 \times 43\% \\ &= 5130 + 2150 = \underline{7280}\end{aligned}$$

$$\begin{aligned}\text{WACMR} &= \frac{\text{WACMU}}{\text{WACMSP}} = \frac{3570}{7280} = \underline{0.49 = 49\%}\end{aligned}$$

$$\begin{aligned}\text{BE Revenue} &= \frac{\text{TFC}}{\text{WACMR}} \\ &= \frac{15,000,000}{0.49} = \underline{30,612,245}\end{aligned}$$

$$\begin{aligned}\text{Total Profit} &= \text{Total Sales Revenue} - \text{Promotional Expense} \\ &= 30,612,245 - 200,000 \\ &= \underline{30,412,245}\end{aligned}$$

d) The company has planned to buy new and improved technology that reduces variable production expenses for its LCD TV set to Br4,000 while increasing its monthly fixed production costs by Br500,000. If the plan

materializes and other things remain constant, determine breakeven sales volume and sales revenue for the company.

$$VC = 4000 \text{ TFC} = 15,000,000 + 500,000 = 15,500,000$$

$$\begin{aligned} \text{WACM} &= \text{UCM LCD\%} + \text{UCM CRT\%} \\ &= 5000 \times 57\% + 3000 \times 43\% \\ &= 2850 + 1290 = \underline{4140} \end{aligned}$$

$$\text{BE Sales Volume} = \frac{\text{TFC}}{\text{WACM}} = \frac{15,500,000}{4140} = \underline{3744}$$

$$\begin{aligned} \text{WACMSP} &= \text{SP} \times \text{Mi} + \text{SP} \times \text{Mi} \\ &= 9000 \times 57\% + 5000 \times 43\% \\ &= 5130 + 2150 = \underline{7280} \end{aligned}$$

$$\text{WACMR} = \frac{\text{WACMU}}{\text{WACMSP}} = \frac{4140}{7280} = \underline{0.57 = 57\%}$$

$$\begin{aligned} \text{BERevenue} &= \frac{\text{TFC}}{\text{WACMR}} \\ &= \frac{15,500,000}{0.57} = \underline{27,192,982.46} \end{aligned}$$

- e) If the company is guaranteed with total sales volume of 10,000 TV sets in a given month, should it go for option “c” or “d” above given that sales mix remained constant as provided in each of the two options? Why? What if the guaranteed total sales volume of 7,000 instead of 10,000? Why? What should be the guaranteed total sales volume for the two options to provide equal profit to the company?

In the case of option ‘C’

Breakeven Revenue.....	30,612,245
Fixed Cost.....	15,000,000
Variable Cost.....	7000
Promotional Cost.....	200,000
Total Cost.....	(15,207,000)
Total Profit.....	<u>15,405,245</u>

In the case of option ‘D’

Break even Revenue.....	27,192,982.46
Fixed Cost.....	15,500,000
Variable Cost.....	6000
Total Cost.....	(15,506,000)
Total Profit.....	<u>11,686,982.46</u>

- ❖ If the company is guaranteed with total sales volume of 10,000 TV sets in a given month the Total Profit for option 'C' is 15,405,245 & for option 'D' is 11,686,982.46. Therefore option 'C' with greater profit is preferable than option 'D'.
 - ❖ Because profit of option 'C' is greater than option 'D'. Option 'C' is our best option if the guaranteed total sales volume of 7000 instead of 10,000 too. Because the sales volume does not affect the profit amount.
 - ❖ Both cases have the same total sales volume but to make the profit equal in the company the total cost of production must be equal.
2. Sino-woodworks Ethiopia Ltd makes office furniture from fine hardwoods. The company uses a job-order costing system and predetermined overhead rates to apply manufacturing overhead cost to jobs. The predetermined overhead rate in the Preparation Department is based on machine-hours, and the rate in the Fabrication Department is based on direct materials cost. At the beginning of the year, the company's management made the following estimates for the year:

	Department	
	Preparation	Fabrication
Machine-hours	80,000	21,000
Direct labor-hours	35,000	65,000
Direct materials cost	\$190,000	\$400,000
Direct labor cost	\$280,000	\$530,000
Manufacturing overhead cost	\$416,000	\$720,000

Job-C was started on April 1 and completed on May 12. The company's cost records show the following information concerning the job:

	Department	
	Preparation	Fabrication
Machine-hours	350	70
Direct labor-hours	80	130
Direct materials cost	\$940	\$1,200
Direct labor cost	\$710	\$980

Required:

- a) Compute the predetermined overhead rate used during the year in the Preparation and Fabrication Departments.

$$\begin{aligned} \text{Predetermined Over head cost} &= \frac{\text{Estimated Total MOHC}}{\text{Estimated total amount of allocated base}} \\ \text{(For Preparation)} &= \frac{416,000}{80,000} \\ &= \underline{5.2 \text{ Per Machine hour}} \end{aligned}$$

$$\begin{aligned} \text{Predetermined Over head cost} &= \frac{\text{Estimated Total MOHC}}{\text{Estimated total amount of allocated base}} \\ \text{(For Fabrication)} &= \frac{720,000}{400,000} \\ &= 1.8 \times 100\% = \underline{180\% \text{ of Direct Material Cost}} \end{aligned}$$

- b) Compute the total overhead cost applied to Job-C.

$$\begin{aligned} \text{Total OHC} &= \text{Predetermined OH Cost rate} \times \text{Actual T.amount of the allocated} \\ \text{(For Preparation)} &= 5.2 \text{ per machine hr} \times 350 \\ &= \underline{1820} \end{aligned}$$

$$\begin{aligned} \text{Total OHC} &= \text{Predetermined OH Cost rate} \times \text{Actual T.amount of the allocated} \\ \text{(For Fabrication)} &= 180\% \times 1200 \\ &= \underline{2160} \end{aligned}$$

- c) What would be the total cost recorded for Job-C? If the job contained 25 units, what would be the unit product cost?

For Preparation Total Cost

Direct Labour.....	710
Direct Material.....	940
FOH.....	<u>1820</u>
Total Manufacturing Cost.....	<u>3470</u>

$$\begin{aligned} \text{Unit Production Cost} &= \frac{\text{Total Manufacturing Cost}}{\text{Unit}} \\ &= \frac{3470}{25} = \underline{139} \end{aligned}$$

For Fabrication Total Cost

Direct Labour.....	980
Direct Material.....	1200
FOH.....	<u>2160</u>
Total Manufacturing Cost.....	<u>4340</u>

$$\text{Unit Production Cost} = \frac{\text{Total Manufacturing Cost}}{\text{Unit}} = \frac{4340}{25} = \underline{174}$$

d) At the end of the year, the records of the company revealed the following actual cost and operating data for all jobs worked on during the year:

	Department	
	Preparation	Fabrication
Machine-hours	73,000	24,000
Direct labor-hours	30,000	68,000
Direct materials cost	\$165,000	\$420,000
Manufacturing overhead cost	\$390,000	\$740,000

What was the amount of under-applied or over-applied overhead in each department at the end of the year?

$$\begin{aligned} \text{Total OHC} &= \text{Predetermined OH Cost rate} \times \text{Actual T.amount of the allocated} \\ \text{(For Preparation)} &= 5.2 \text{ per machine hr} \times 73,000 \\ &= \underline{379,600} \end{aligned}$$

$$\begin{aligned} \text{Total OHC} &= \text{Predetermined OH cost rate} \times \text{Actual T.amount of the allocated} \\ \text{(For Fabrication)} &= 180\% \times 420,000 \\ &= \underline{756,000} \end{aligned}$$

Actual MOHC For preparation.....	390,000
Applied OH Cost.....	<u>379,600</u>
Under applied OH Cost.....	<u>10,400</u>

Under applied actual MOH > Applied MOH

Actual MOHC For Fabrication.....	740,000
Applied OH Cost.....	<u>756,000</u>

Over applied OH Cost.....16,000

Over Applied Actual MOH < Applied MOH

3. Sino-electronics East-Africa Ltd manufactures electric meters for sale to its African and Middle-East customers. The product goes through three departments. The following information is available for the first department during June, 2014.

		<i>Percent Completed</i>	
	<i>Units</i>	<i>Materials</i>	<i>Conversion</i>
Work in process, beginning	70,000	70%	40%
Started into production	460,000		
Completed and transferred out	450,000		
Work in process, ending	80,000	75%	25%
		<i>Materials</i>	<i>Conversion</i>
Work in process, beginning		\$36,550	\$13,500
Cost added during June		\$391,850	\$287,300

Required: Assume that the company uses the weighted-average process costing.

- a) Determine the equivalent units for June for the first process.

Step 1. Analyze the physical Flow

Input Physical Units

Work in Process inv, June1.....70,000

Units Started During June.....460,000

Total Units to account for.....530,000

Out Put

Units Completed & Transferred out During June.....450,000

Work in Process inv, June 30.....80,000

Total Units accounted for.....530,000

Step 2 :- Equivalent Unit

		Equivalent Unit		
	Units	Completion%	Material	Conversion
WIP June 1	70,000			
Material		70%		
Conversion		40%		
Units Started	460,000			
Unit to account For	530,000			
Units Completed	450,000	100%	450,000	450,000
WIP June 30	80,000			
Material		75%	60,000	
Conversion		25%		20,000
Units accounted for	530,000			
Total EU			510,000	470,000

b) Compute the costs per equivalent unit for June for the first process.

Cost Per Equivalent Unit			
	Material	Conversion	Total
WIP June 1	36,550	13,500	50,050
Cost added during june	391,850	287,300	679,150
TC to account for	428,400	300,800	729,200
Divide by Equivalent Unit(EU)	510,000	470,000	
EU Cost	0.84	0.48	1.48

C)Determine the total cost of ending work in process inventory and the total cost of units transferred to the second process in June.

Equivalent Unit				
	Units	Completion%	Material	Conversion
Ending WIP June 30	80,000			
Material		75%	60,000	
Conversion		25%		20,000

	Material	Conversion	Total
Material	50,000		50,000
Conversion		12,800	12,800
Total Ending WIP Cost			62,800

Cost accounted for transfered out($450,000 \times 1.48$).....666,000

- c) Reconcile the total costs assigned to the ending work in process inventory and the units transferred out with the costs in beginning inventory and costs added during the period.

Assigned Total Cost			
	Completed & Transferred Out	Ending WIP	Total
Goods Completed & Transferred Out (450,000×1.48)	666,000		666,000
Ending WIP Material(60,000×0.84)		50,400	
Conversion(20,000×0.64)		12,800	
Total Cost Account For	666,000	63,200	729,200

Cost allocated for transferred out WIP June 30.....666,000
 Materials.....50,400
 Conversion Cost.....12,800
 Ending WIP.....63,200
 Total Cost.....729,200

4. Sino-Afro Electronics manufactures different optical switch for networking uses in different industries. During 2013, the company completed an order for a special optical switch for a new customer, Ethio-telecom. This customer did not order any other products during the year. Data concerning that order follow:

Data related to Ethio-telecom order	
Selling price	\$295 per unit
Units ordered	100 units
Direct materials	\$264 per unit
Direct labor hours	0.50 hrs per unit
Direct labor rate	\$25 per direct labor hr

Currently, the company is concerned whether to accept this special order, thus, contracts your professional advice. The company traditionally uses direct labor hours to allocate manufacturing overhead costs. Total direct labor hours was estimated to be 20,000 in 2013. Other operating data for the year 2013 is provided in the following table. Note that 80% of the overhead costs are related to production while the remaining 20% are selling and administrative.

Overhead Costs

Wages and salaries	\$350,000
Other overhead costs	<u>200,000</u>
Total overhead costs	<u><u>\$550,000</u></u>

Activity Cost Pool	Activity Measure	Total Activity
Direct labor support	Number of direct labor-hours	10,000 DLHs
Order processing	Number of orders	500 orders
Customer support	Number of customers	100 customers
Other	These costs are not allocated to products or customers	Not applicable

	Distribution of Resource Consumption Across Activity Cost Pools				
	Direct Labor Support	Order Processing	Customer Support	Other	Total
Wages and salaries	30%	35%	25%	10%	100%
Other overhead costs	25%	15%	20%	40%	100%

Required

- a) Shall the company accept the special order if the traditional costing system is in use? Why?

Direct Material(264×100).....	26,400
Direct Labour(20,000×25).....	500,000
MOH(550,000×80%).....	<u>440,000</u>
Total Production Cost.....	966,400
Unit Ordered.....	100 Unit
Unit Production Cost.....	<u>9664</u>
Selling Price.....	29,500
Total Production Cost.....	<u>(966,400)</u>
Profit or Loss.....	<u>(936,900)</u>

- b) Shall the company accept the special order if activity-based costing system is in use? Why?

Activity Cost Pools

	DL Support	Order Processing	Customer Support	Others	Total
Wage & Salaries	30%	35%	25%	10%	100%

Others OH Cost	25%	15%	20%	40%	100%
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Allocation Activity Cost

	DL Support	Order Processing	Customer Support	Others	Total
Wage &Salaries	105,000	122,500	87,500	35,000	350,000
Others OH Cost	50,000	30,000	40,000	80,000	200,000
Total	155,000	152,500	127,500	115,000	550,000

Activity based Costing

Activity cost pools	Total Costs	Total Activity	Activity Rate
DL Support	155,000	10,000DLHs	15.5Per DLHs
Order Processing	152,500	500 Order	304 Per Order
Customer Support	127,500	100 Customers	1275Per Customer
Others	115,000	Not Applicable	Not Applicable

Overhead Cost

Activity Cost Pools	Activity Rate	Activity	Applied Cost
DL Support	15.5Per DLHs	10,000	155,000
Order Processing	304 Per Order	500	152,000
Customer Support	1275 Per Order	100	127,500
Total			434,500

Total Cost.....434,500

Total OH Not assigned to product cost.....115,000

Total OH Cost.....549,500

Unit Order.....100 Unit

Unit Product OH Cost.....5495

Product Cost Per Unit

Direct Material.....	264
Direct Labour.....	25
Overhead.....	<u>1458</u>
Product Cost Per Unit.....	<u>1747</u>

c) Does the costing system affect your advice regarding acceptance of the special order? Why?

MOH Cost Of Traditional.....	9700
ABC.....	1458
Product Margin Difference Increase.....	(8242)