

Accounting for Managers

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MGM341

Lecture (6)

Relevant information for decision making



Learning outcomes

- LO 1** Identify Decision models
- LO 2** Explain the different types of information.
- LO 3** Describe the steps of decision making process.
- LO 4** State the features of relevant information.
- LO 5** Explain the different types of decisions.

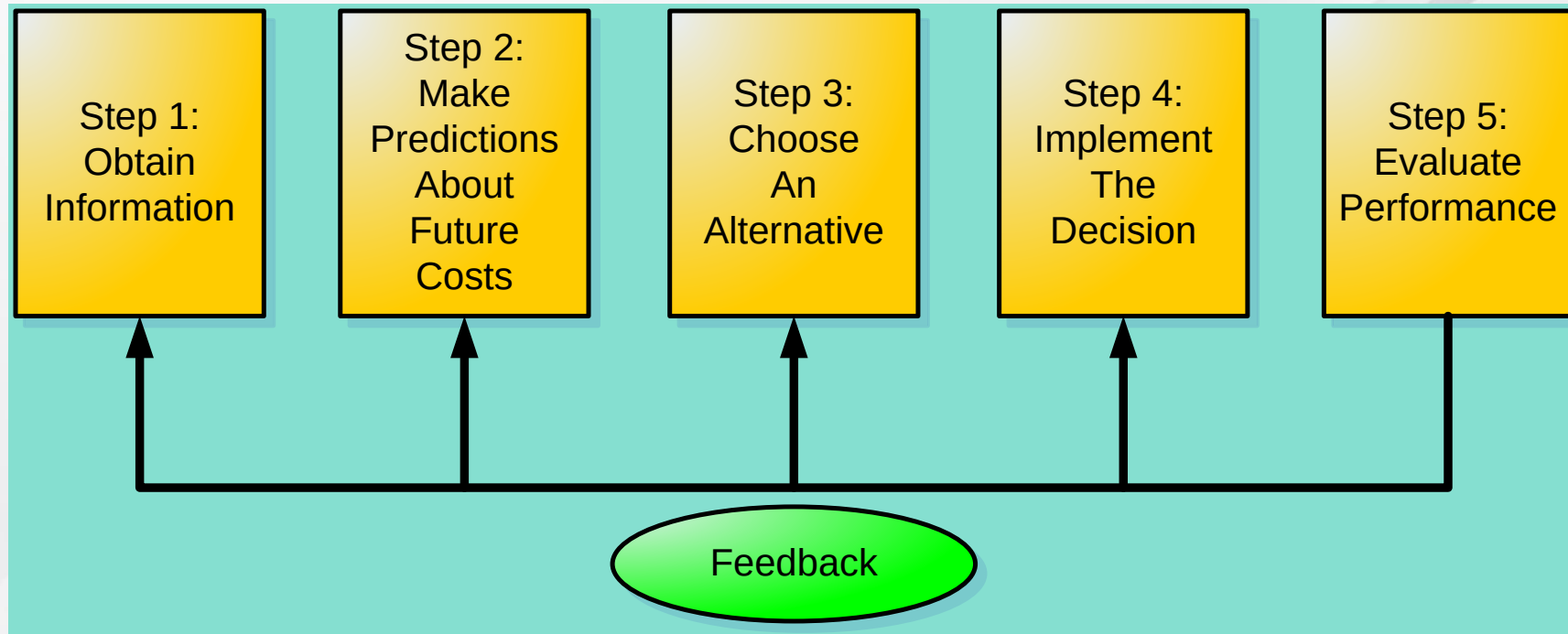
Decision Models

- A decision model is a formal method of making a choice, often involving both **quantitative** and **qualitative** analyses.
- Managers often use some variation of the **five-step** decision-making process.

Types of Information

- **Quantitative factors** are outcomes that can be measured in numerical terms.
- **Qualitative factors** are outcomes that are difficult to measure accurately in numerical terms, such as satisfaction.
 - Qualitative factors are just as important as quantitative factors even though they are difficult to measure.

Five-Step Decision-Making Process



Features of Relevant Information

- Past (historical) costs may be helpful as a basis for making predictions. However, historical costs are always irrelevant when making decisions and considered as **sunk cost**(Such as purchasing of machine last year)
- Not all expected future revenues and expected future costs are relevant. Expected future revenues and **expected future costs that do not differ among alternatives are irrelevant** and, hence can be **eliminated from the analysis**. The key question is always, What difference will an action make?

Types of Decisions

- **Make or buy**
- **Accepting special order.**
- **Sell or process further**
- **Asset replacement.**

1- Make or Buy

A make-or-buy decision is an act of choosing between manufacturing a product in-house or purchasing it from an external supplier.

	Make	Buy
Purchase cost		*
Total production cost:		
Direct material	*	
Direct labor	*	
Variable overhead	*	
Total Relevant Costs	**	*

The manager of DD Company has purchased a special part from vendors at a cost of L.E. 145 per part.

The company estimates the following manufacturing costs:

- * Direct material L.E.45
- * Direct labor L.E. 63
- * Cost of variable manufacturing overhead L.E. 27
- * Fixed manufacturing overhead: [depreciation L.E. 18000 and other fixed costs L.E. 270000].

Required

The DD company management has unused idle capacity which could be used in producing this part (50000 part) , Do you advice buying or making this part?

	Make	Buy
Purchase cost $[50000 \times 145]$		7250000
Total production cost:		
Direct material (45×50000)	2250000	
Direct labor (63×50000)	3150000	
Variable overhead (27×50000)	1350000	
Total Relevant Costs	6750000	7250000

- * The total production cost L.E. 6750000 less than the total purchase cost L.E. 7250000, so as the accountant advice management **to make** this parts.
- * The fixed manufacturing overhead (depreciation and other fixed costs) is irrelevant cost to take the decision of make or buy because the company can not eliminate this costs.

The manager of Zaher Company has purchased a special part from **supplier** at a **cost** of L.E. 125 per part.

The company estimates the following manufacturing costs:

- * Direct material L.E.37
- * Direct labor L.E. 43
- * Cost of variable manufacturing overhead L.E. 57
- * Fixed manufacturing overhead: [depreciation L.E. 18000 and other fixed costs L.E. 270000].

Required

Zaher company Management has unused idle capacity which could be used in producing this part (40000 part) , Do you advice buying or making this part?

	Make	Buy
Purchase cost $[40000 \times 125]$		5000,000
Total production cost:		
Direct material (37×40000)	1,480,000	
Direct labor (43×40000)	1,720,000	
Variable overhead (57×40000)	2,280,000	
Total Relevant Costs	5,480,000	5000,000

- * The total production cost L.E. 5480000 more than the total purchase cost L.E. 5000,000, so as the accountant advice management **to buy** this parts.
- * The fixed manufacturing overhead (depreciation and other fixed costs) is irrelevant cost to take the decision of make or buy because the company can not eliminate this costs.

2- Accepting a special order

This decision means the acceptance or rejection of an special order **which utilizes unused or excess capacity is available** and the price of special order is lower than normal price.

Before take the final decision, there are some factors would need to be considered:

- * There are spare capacity or not.
- * The special order at lower price lead other customers to demand lower prices as well or not.
- * The special order achieve (or not) positive contribution margin or not.
- * It is absolutely certain that fixed costs will not alter.

	The special order
Sales	*
(-)	(*)
Variable manufacturing cost	(*)
Variable selling & administrative costs	(*)
Contribution margin	**

If the following data are provided form MM company.

- * Units sold 20000
- * Manufacturing cost (40% fixed) L.E 400000
- * Selling and administrative (30% fixed) L.E100000
- * Selling price per unit L.E. 30

Required

Calculate the effect of accepting a special order of 4000 units on net income at a selling price of L.E. 19 using contribution approach.

Manufacturing cost per unit = L.E. 400000 ÷ 20000 unit = L.E. 20

Fixed manufacturing cost per unit = L.E. 20 × 40% = L.E. 8

Variable manufacturing cost per unit = L.E. 20 × 60% = L.E. 12

Selling and administrative cost per unit = L.E. 100000 ÷ 20000 unit = L.E. 5

Fixed selling and administrative cost per unit = L.E. 5 × 30% = L.E. 1.5

Variable selling and administrative cost per unit = L.E. 5 × 70% = L.E. 3.5

	The special order
Sales (4000 unit $\times$ 19)	76000
(-)	
Variable manufacturing cost (4000 unit $\times$ 12)	(48000)
Variable selling & administrative costs (4000 $\times$ 3.5)	(14000)
Contribution margin	14000

Decision:

The management of MM company will accept the special order because the revenue cover the total variable cost and achieve contribution margin L.E. 14000.

If the following data are provided form MM company.

- * Units sold 20000
- * Manufacturing cost (60% variable) L.E 400000
- * Selling and administrative (70% variable) L.E100000
- * Selling price per unit L.E. 30

Required

Calculate the effect of accepting a special order of 6000 units on net income at a selling price of L.E. 14 using contribution approach.

Manufacturing cost per unit = L.E. 400000 ÷ 20000 unit = L.E. 20

Variable manufacturing cost per unit = L.E. 20 × 60% = L.E. 12

Selling and administrative cost per unit = L.E. 100000 ÷ 20000 unit = L.E. 5

Variable selling and administrative cost per unit = L.E. 5 × 70% = L.E. 3.5

	The special order 6000 unit
Sales (6000 unit $\times$ 14)	84000
(-)	
Variable manufacturing cost (6000 unit $\times$ 12)	72000
Variable selling & administrative costs (6000 $\times$ 3.5)	21000
Contribution margin	(9000)

Decision:

The management of DD Company will reject the special order because the revenue is not cover the total variable cost and does not achieve contribution margin.

3- Sell or process further

The joint products are found in industries that process common raw materials such as **chemical**, **petroleum**, the management want to decide whether it is profitable to sell the product at the **split-off point** or **processed further before sale**.

Joint cost is the cost occurred before split-off point and are **considered irrelevant** in make the decision to be more processed or not.

In such a sell or process-further decision, the relevant data to be considered are: **The total additional processing costs and the total additional sales revenue after further processing.**

Mobil company has **two joint products**, **X** and **Y**, 1 million liter of (x) at selling price L.E. 0.09 and 500000 liter of (y) at a selling price L.E. 0.06, the joint processing cost is L.E. 100000.

- * Mobil can **further process** the 500000 liters of Y and sell it to the plastic industry as product YA.
- * **The additional processing cost** would be L.E. 08 per liter for manufacturing and distribution, a total of L.E. 40000 for 500000 liters.
- * The net sales price of YA would be L.E. 0.16 per liter, a total of L.E. 80000.

Required

Advice Mobil company to sell product (**x**) and (**y**) or further process to sell product (**x**) and (**YN**).

Revenue Before further:

$$X = 1000000 \times 0.09 = 90000$$

$$Y = 500000 \times 0.06 = 30000$$

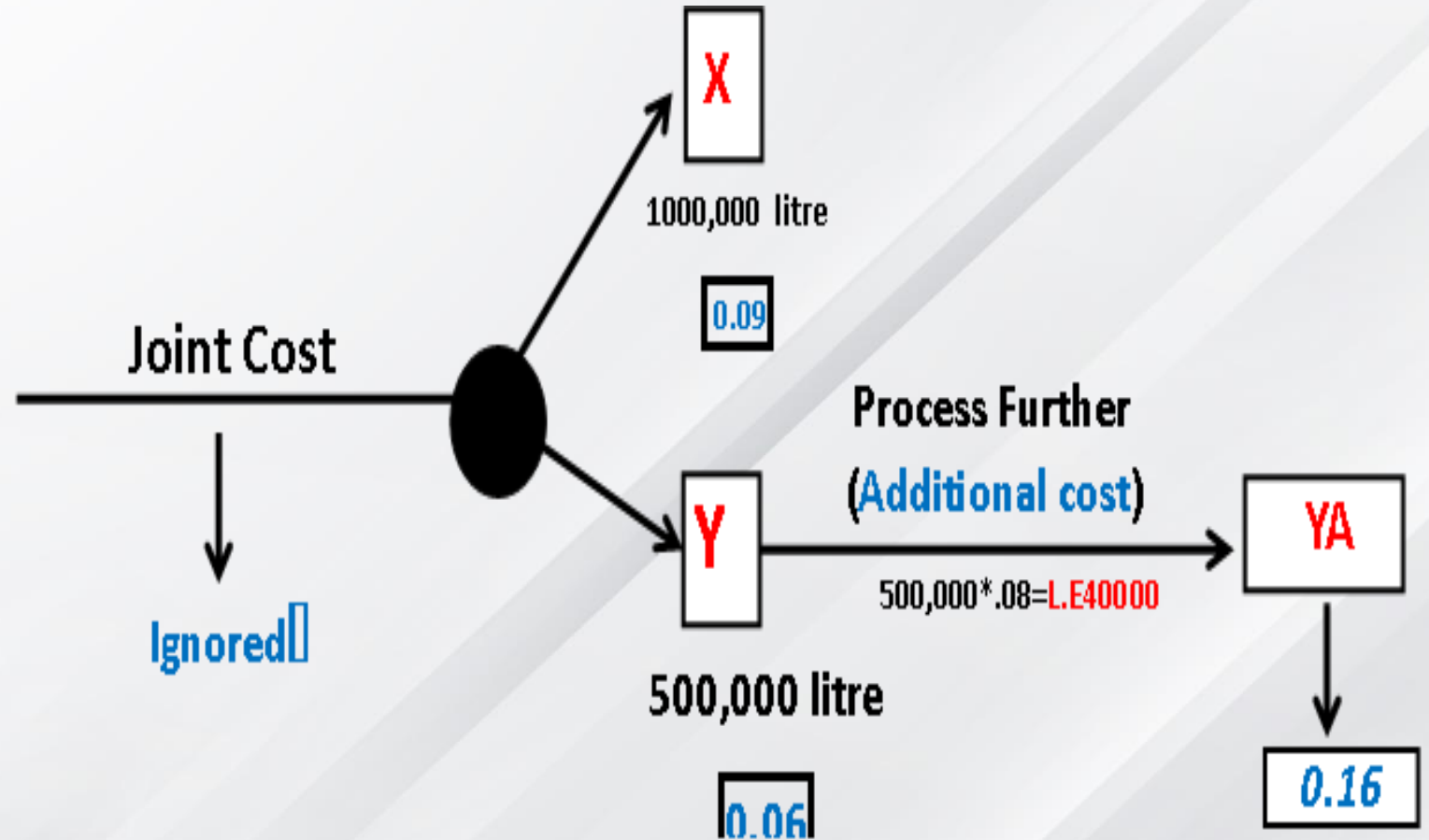
* Processing cost = 100000

Revenue After further

$$X = 1000000 \times 0.09 = 90000$$

$$YA = 500000 \times 0.16 = 80000$$

$$\begin{aligned} \text{Additional processing cost} &= \\ 0.08 \times 500000 &= \text{L.E}40000 \end{aligned}$$



	Alternative (1) (Sell at split off)			Alternative (2) (Process Further)		
	X	Y	Total	X	YA	Total
Revenue	90000	30000	120000	90000	80000	170000
(-) Joint costs			100000			100000
(-) Additional costs					40000	40000
Income effects			20000			30000

Decision:

Mobil Company **can further process** because product (X) and (YA) are more profitable it achieve L.E. 30000 that increase L.E. 10000 (L.E. 30000 – L.E. 20000) if produce (x) only.

The MM chemical Company can sell product B for L.E. 378000 **at the split-off point** or process it further to make a new product BB lumber.

The **additional processing costs** would be L.E. 20000 and the sales revenue from BB lumber would be L.E. 416000.

Required

Can the accountant tell the company **sell product B or process it further product BB.**

Additional sales revenue and costs from processing further	Process further (product BB)	Sell (Product B)	
L.E. 38000	416000	378000	Sales revenue
			(-)
20000	20000	0	Additional Processing cost
L.E. 18000	396000	378000	Relevant Income

Decision:

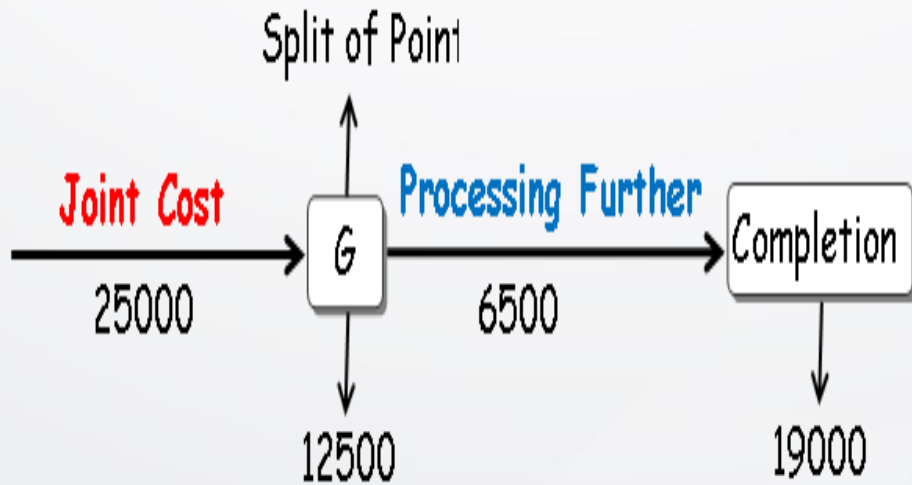
The Company can further process because it will be more profitable achieve

Anas Corporation has a joint process which produces three products: P, G, and A, Each product may be sold at split – off or processed further and then sold. Joint processing costs for a year amount to L.E 25000. Other relevant data are as follows:

Product	Sales Value Split Off	Separable Processing Costs after Split Off	Sales Value at Completion
P	L.E 62000	L.E 5000	L.E 88000
G	12500	6500	19000
A	6400	8000	10000

Product G:

- should be processed further to increase profits by L.E 6500.
- should be sold at split-off since processing further would only reduce profits by L.E 6500.
- Should be processes further to increase profits by L.E 19000.
- Can be processed further or sold at split-off: there is no difference in profit.



	Split of Point	Process Further
Revenue	12500	19000
Additional Cost	0	(6500)
	12500	12500

→ No Difference ←

Answer → **D**

Can be Processed Further or sold at split - off, There is no difference in profit

4- Asset replacement

The main information required to replace an old asset with a new one

- 1) Remaining life from old asset**
- 2) Useful life for the new asset**
- 3) Cash operating cost**

Data	Old asset	New asset	Difference
1) Cash operating expense	Annual operating exp. $\otimes$ Remaining life	Annual operating exp. $\otimes$ Useful life	
2) Disposal value	-	XX	
3) Cost of new asset	-	XX	

Three years ago, Zaher company bought a frozen yogurt machine for L.E 8.000 a salesman has just suggested manager to replaces the machine with a new L.E. 12500 machine. The manager has gathered the following data:

	Old machine	New machine
Original cost	L.E. 8000	L.E. 12500
Useful life in years	8	5
Current age in year	3	0
Useful life remaining in years	5	5
Accumulated depreciation	L.E 3000	-
Book value	L.E 5000	-
Disposal value (in each) now	L.E 3000	-
Disposal value in 5 year	0	0
Annual cash operating cost	L.E 1500	L.E 2000

Compute the different in total costs over the next five year under both alternative ignore taxes.

Cash operation cost:

Useful life remaining in years x annual cash operating cost

	Keep	Replace	Difference
Cash operation cost	22500 (5 × 4500)	10000 (5 × 2000)	12500
Disposal value		(3000)	3000
Purchase cost		12500	(12500)
Total cost	22500	19500	3000



Thank You