

**Address the following questions properly.**

1. Write two factors making management accounting to be different from cost accounting.
2. What does management accountants are staff employees mean? Show using example.
3. Consider the following short descriptions. Indicate whether each description more closely relates to a major feature of financial accounting (**Use FA**) or management accounting (**Use MA**).
  - a) The field is more sharply defined.
  - b) Is characterized by detailed reports.
  - c) Has a future orientation.
  - d) Is constrained by generally accepted accounting principles.
  - e) Has less flexibility.
4. Why does management accounting tend to be less precise than financial accounting information?
5. Explain the two main similarities between financial accounting and management accounting information.
6. Give an example of a primary user of financial accounting information and management accounting information.
7. Contribution margin is the excess of sales over fixed costs.” Do you agree? Explain.
8. What is meant by a product’s CM-ratio?
9. Company A’s cost structure includes costs that are mostly variable, whereas company B’s cost structure includes costs that are mostly fixed. In a time of increasing sales, which company will tend to realize the most rapid increase in profits? Explain.
10. What does the term sales mix mean? CVP analysis includes some inherent simplifying assumptions. What assumption is usually made concerning sales mix?
11. What are relevant costs in the decision making process?
12. “All future costs are relevant in decision making.” Do you agree? Why?
13. What is the advantage of the contribution approach as compared with the absorption approach?
14. Distinguish between quantitative and qualitative factors in decision-making. Give examples.

## Part II: Work Out

1. Zebra Company buys a product for br. 500 and sells it at a contribution margin of 20%. The company breaks even at 400 units.
  - a) Compute unit contribution margin
  - b) Compute total fixed costs
  - c) Compute margin of safety in units and revenue at a profit target of br. 50,000
2. A company currently generates a sales of br. 100,000 by selling 10,000 units. If margin of safety is br. 20,000 compute breakeven point in units and revenue.
3. An oil company considering the sitting of a new petrol filling station beside a city bypass. It has made the following calculation. Cost of operations per annum:

Salaries of staff -----Birr 30000

Depreciation of equipment -----Birr 5000

Renal of site-----Birr 5000

Cost of liter of petrol -----0.48

Selling price per liter -----0.50

- A. How many liters must be sold to break even?
  - B. If an investment in promotional advertising would produce an increase in liters sold of 250000 liters, how much could the company afford to spend on this exercise to break even?
  - C. Were the company to sell higher-grade petrol, retailing at \$0.52 per liter and costing \$0.49 per liter, the more expensive pumps would require a further depreciation of \$3000. What effect would such a scenario have on the break-even point calculated in requirement 1?
4. The Doral Company manufactures and sells pens. Currently, 5,000,000 units are sold per year at \$0.50 per unit. Fixed costs are \$900,000 per year. Variable costs are \$0.30 per unit. Consider each case separately:
    - 1 a. What is the current annual operating income?
    - b. What is the present breakeven point in revenues?

Compute the new operating income for each of the following changes:

2. A \$0.04 per unit increase in variable costs
3. A 10% increase in fixed costs and a 10% increase in units sold
4. A 20% decrease in fixed costs, a 20% decrease in selling price, a 10% decrease in variable cost per unit, and a 40% increase in units sold

Compute the new breakeven point in units for each of the following changes:

5. A 10% increase in fixed costs
  6. A 10% increase in selling price and a \$20,000 increase in fixed costs
5. Brooke Motors is a small car dealership. On average, it sells a car for \$27,000, which it purchases from the manufacturer for \$23,000. Each month, Brooke Motors pays \$48,200 in rent and utilities and \$68,000 for salespeople's salaries. In addition to their salaries, salespeople are paid a commission of \$600 for each car they sell. Brooke Motors also spends \$13,000 each month for local advertisements. Its tax rate is 40%.
- A. How many cars must Brooke Motors sell each month to break even?
  - B. Brooke Motors has a target monthly net income of \$51,000. What is its target monthly operating income? How many cars must be sold each month to reach the target monthly net income of \$51,000?
6. The Express Banquet has two restaurants that are open 24-hours a day. Fixed costs for the two restaurants together total \$459,000 per year. Service varies from a cup of coffee to full meals. The average sales check per customer is \$8.50. The average cost of food and other variable costs for each customer is \$3.40. The income tax rate is 30%. Target net income is \$107,100.
1. Compute the revenues needed to earn the target net income.
  2. How many customers are needed to break even? To earn net income of \$107,100?
  3. Compute net income if the number of customers is 170,000.
7. Hoot Washington is the newly elected leader of the Republican Party. Media Publishers is negotiating to publish Hoot's Manifesto, a new book that promises to be an instant best-seller. The fixed costs of producing and marketing the book will be \$500,000. The variable costs of producing and marketing will be \$4.00 per copy sold. These costs are before any payments to Hoot. Hoot negotiates an up-front payment of \$3 million, plus a 15% royalty rate on the net sales price of each book. The net sales price is the listed bookstore price of \$30, minus the

margin paid to the bookstore to sell the book. The normal bookstore margin of 30% of the listed bookstore price is expected to apply.

1. Prepare a PV graph for Media Publishers.
  2. How many copies must Media Publishers sell to (a) break even and (b) earn a target operating income of \$2 million?
  3. Examine the sensitivity of the breakeven point to the following changes:
    - a. Decreasing the normal bookstore margin to 20% of the listed bookstore price of \$30
    - b. Increasing the listed bookstore price to \$40 while keeping the bookstore margin at 30%
    - c. Comment on the results
8. Zoom Company manufactures and sells a telephone answering machine. The company's income statement for the most recent year is given below:

|                      | <u>Total</u>   | <u>Per Unit</u> | <u>Percent</u> |
|----------------------|----------------|-----------------|----------------|
| Sales (20,000 units) | Br. 1,200,000  | Br. 60          | 100            |
| Variable expenses    | <u>900,000</u> | <u>45</u>       | <u>?</u>       |
| Contribution Margin  | Br. 300,000    | Br. <u>15</u>   | <u>?</u>       |
| Fixed Expenses       | <u>240,000</u> |                 |                |
| Net Income           | <u>60,000</u>  |                 |                |

Based on the above data, answer the following questions.

**Instructions:**

- a. Compute the company's CM ratio and variable expense ratio.
- b. Compute the company's break-even point in both units and sales birr. Use the three CVP approaches to compute the break-even.
- c. Assume that sales increase by Br. 400,000 next year. If cost behavior patterns remain unchanged, by how much will the company's net income increase?

15. Super sales company is the exclusive distributor for a new product. The product sells for Birr 60 per unit and has a CM ratio of 40%. The company's fixed expenses are Br. 360,000 per year.

**Instructions:**

- a. What are the variable expenses per unit?
  - b. Using the equation method:
    - i. What is the break-even point in units and sales birr?
    - ii. What sales level in units and in sales birr is required to earn an annual profit of Br. 90,000?
    - iii. Assume that through negotiation with the manufacturer the Super Sales Company is able to reduce its variable expenses by Br. 6 per unit. What is the company's new break-even point in units and in sales birrs?
  - c. Repeat (b) above using the contribution margin method.
16. Tantu Company manufactures and sales a single product. During the year just ended the company produced and sold 60,000 units at an average price of Br.20 per unit. Variable manufacturing costs were Br 8 per unit, and variable marketing costs were Br 4 per unit sold. Fixed costs amounted to Br. 180,000 for manufacturing and Br.72, 000 for marketing. There was no year-end work-in-progress inventory. Ignore income taxes.

**Instructions:**

- a) Compute Tantu's breakeven point (BEP) in sales birrs for the year.
- b) Compute the number of sales units required to earn a net income of Br 180,000 during the year
- c) Tantu's variable manufacturing costs are expected to increase 10 % in the coming year. Compute the firm's breakeven point in sales birr for the coming year.
- d) If Tantu's variable manufacturing costs do increase 10 %, compute the selling price that would yield the same CM-ratio in the coming year

17. Hydro System Engineering Associates, Inc. provides consulting services to city water authorities. The consulting firm's contribution margin ratio is 20%, and its annual fixed expenses are Br. 120, 000. The firm's income-tax rate is 40%.

**Instructions:**

- Calculate the firm's break-even volume of service revenue.
  - How much before-tax income must the firm earn to make an after-tax net income of Br. 48, 000?
  - What level of revenue for consulting services must the firm generate to earn an after-tax income of Br.48, 000?
  - Suppose the firm's income-tax rate rises to 45 percent. What will happen to break-even level of consulting service revenue?
18. Addis Marine Products Inc. plans to manufacture and sell accessories for recreational fishing craft and pleasure boats. Three of the principal product lines are manufactured at the Awassa plant. Operating data for the coming year is estimated as follows:

|                | <i>Product Lines</i> |                 |                 |
|----------------|----------------------|-----------------|-----------------|
|                | <b>Ethio-01</b>      | <b>Ethio-02</b> | <b>Ethio-03</b> |
| Sales price    | Br.150               | Br.80           | Br.40           |
| Variable costs | 100                  | 60              | 10              |
| Units sales    | 3, 200 units         | 1, 600 units    | 4, 800 units    |

The total annual fixed cost on the three-product lines amount to Br. 840,000

**Instructions:**

- Assuming the above sales mix, determine the BEP (break-even point) for Addis Company during the coming year. Also determine the number of units of each product that should be sold to break even in units and in birrs.

- b) What volume of sales in birrs for each product must Addis Marine Products Inc. achieve to earn a net income of Br. 73,500 after taxes in the coming year? Assume the company is subject to a 30% income tax rate.
  - c) Calculate the total sales volume in units and in birrs for each product so that Addis Company achieves 8.4% return on sales.
  - d) Suggest any other alternative sales mix that can lower the Company's **BEP in units** holding the unit selling price, the unit variable cost and the total annual fixed costs constant.
19. Compute the number of units of product that must be sold if the company is to breakeven in each of the independent situations described below
- a) The contribution margin per unit of the product sold is Br.1.45. The fixed costs for the year are Br. 551,000.
  - b) The contribution margin is 35% of the revenue, and the fixed costs are Br.84, 000 a year. Each unit of product sells for Br.16
  - c) The fixed costs amount to Br. 146, 000 a year. Each unit sold contributes Br 5.00 to a recovery of fixed costs and to profit.
  - d) The variable costs to manufacture and sell a certain line of product amount to 60% of the revenue. The fixed costs for the year are Br. 218, 000, and each unit of product sells for Br.5.45.
  - e) Two product lines are sold; Product A and Product B. Sales are in the fixed ratio of 3 units of Product A for every 2 units of Product B. The fixed costs are Br. 169, 000 a year. Product A is sold for Br. 5.00 a unit, and the variable costs identified with the production and sales of each unit Product A amount to Br.4.00. Product B is sold for Br.15.00 a unit, and the variable costs identified with the production and sale of each unit of Product B amount to Br.10.00.

20. Cost behavior relationship at two firms, A and B, are given below:

|                  | Firm A           | Firm B           |
|------------------|------------------|------------------|
| Sales price      | Br.0.30 per unit | Br.0.30 per unit |
| Variable cost    | 0.10             | 0.25             |
| Total fixed cost | Br.14, 000       | Br.2, 000        |

Expected sales volume at both companies are 80, 000 units per year.

Instructions:

- Compute the budgeted profit at the expected sales volume of 80, 000 units.
  - Discuss the effect on profits if volume falls to 70, 000 units for both firms.
  - Discuss the effect on profits if volume rise to 90, 000 units for both firms.
  - Comment on the riskiness of the two cost structures.
21. Africa Transportation Company specializes in hauling heavy goods over long distances. Africa's revenues and expenses depend on revenue miles, a measure that combines both weights and mileage. Summarized budget data for the next year are based on total revenue miles of 800,000.

|                                 | Per revenue mile |
|---------------------------------|------------------|
| Average selling price (revenue) | Br. 1.40         |
| Average variable expenses       | 1.20             |
| Fixed expenses                  | 120,000          |

**Instructions:**

- Compute the budgeted net income. Ignore income taxes.
- Management is trying to decide how various possible decisions might affect net income. Compute the net income for each of the following changes. Consider each case independently.
  - A 10% increase in revenue miles.

- ii) An average decrease in selling price of 3 cent per mile and a 5% increase in revenue miles. Refer the original data.
  - iii) An average increase in selling price of 5% and a 10% decreased in variable expense.
  - iv) A 10% increase in fixed expenses in the form of more advertising and a 5% increase in revenue miles.
22. Luxury Products, Inc., manufactures recreational equipment. One of the company's products, a skateboard, sells for Br. 37.50. The skateboards are manufactured in an antiquated plant that relies heavily on direct labor workers. Thus, variable costs are high, totaling Br. 22.50 per skateboard.

Over the past year the company sold 40,000 skateboards, with the following operating results:

|                            |                           |
|----------------------------|---------------------------|
| Sales (40,000 skateboards) | Br. 1,500,000             |
| Variable expenses          | <u>900,000</u>            |
| Contribution margin        | 600,000                   |
| Fixed expenses             | <u>480,000</u>            |
| Net income                 | <u><u>Br. 120,000</u></u> |

Management is anxious to maintain and perhaps even improve its present level of income from the skateboards.

**Instructions:**

- a) Compute the CM ratio and the BEP (in skateboards and in birrs). What is the degree of operating leverage at last year's level of sales?
- b) Due to an increase in labor rates, the company estimates that variable costs will increase by Br. 3.00 per skateboard next year. If this change takes place and the selling price per skateboard remains constant at Br37.50, what will be the new CM ratio and the new BEP (in skateboards and in birrs).

- c) Refer to the data in (b) above. If the expected change in variable costs takes place, how many skateboards will have to be sold next year to earn the same net income as last year?
- d) Refer to the data in (b) above. The president has decided that the company may have to raise the selling price on the skateboards. If Luxury Products wants to maintain the same CM ratio as last year, what selling price per skateboard must it charge in next year to cover the increased labor costs?
- e) Refer to the original data. The company is considering the construction of a new, automated plant to manufacture the skateboards. The new plant would slash variable costs by 40 percent, but it would cause fixed costs to increase by 90 percent. If the new plant were built, what would be the company's new CM ratio and new BEP (in skateboards and in birrs)?
23. Tafach Candy Company is a wholesale distributor of candy. The company service grocery, convenience, and drug stores in a large metropolitan area. The company has achieved small but steady growth in sales over the past few years while candy prices have been increasing. Tafach Candy is formulating its plans for the coming fiscal year. Presented below are the data used to project the current year after – tax income of Br. 110,400.

|                               |                 |
|-------------------------------|-----------------|
| Average selling price per box | <u>Br. 4,00</u> |
|-------------------------------|-----------------|

|                                |  |
|--------------------------------|--|
| Average variable costs per box |  |
|--------------------------------|--|

|               |          |
|---------------|----------|
| Cost of candy | Br. 2.00 |
|---------------|----------|

|                  |      |
|------------------|------|
| Selling expenses | 0.40 |
|------------------|------|

|       |                 |
|-------|-----------------|
| Total | <u>Br. 2,40</u> |
|-------|-----------------|

|                    |  |
|--------------------|--|
| Annual fixed costs |  |
|--------------------|--|

|         |             |
|---------|-------------|
| Selling | Br. 160,000 |
|---------|-------------|

|                |                |
|----------------|----------------|
| Administrative | <u>280,000</u> |
|----------------|----------------|

|       |            |
|-------|------------|
| Total | <u>Br.</u> |
|-------|------------|

440,000

Expense annual sales volume (390,000 boxes) Br. 1,560,000

Tax rate 40%

Manufacturers of candy have announced that they will increase price of their products on average of 15% in the coming year, owing to increases in raw material (sugar, cocoa, peanuts, etc.) and labor costs. Tafach Candy Company expects that all other costs will remain at the same rates or levels as in the current year.

**Instructions:**

- a) What is Tafach Candy Company's BEP in boxes of candy for the current year?
  - b) What selling price per box must Tafach Candy Company charge to cover the 15% increase in the cost of candy and still maintains the current contribution – margin ratio?
  - c) What volume of sales in birrs must the Tafach Candy Company achieve in the coming year to maintain the same net income after taxes as projected for the current year if the selling price of candy remains at Br. 4.00 per box and the cost of candy increases 15%?
  - d) What strategies might Tafach Candy Company use to maintain the same net income after taxes as projected for the current year?
24. Hospitals measure their volume in terms of patient – days, which are defined as the number of patients multiplied by the number of days that the patients are hospitalized. Suppose a large hospital has fixed costs of Br. 18 million per year and variable costs of Br. 300 per patient – day. Daily revenues vary among classes of patients. For simplicity, assume that there are two classes: (1) self – pay patients (s) who pay an average of Br. 500 per day and (2) non-self-pay (G) who are the responsibility of insurance companies and government agencies and who pay an average of Br. 400 per day. Twenty percent of the patients are self – pay.

**Instructions:**

- a. Compute the BEP in-patient – days, assuming that the planned mix of patients is maintained.
  - b. Suppose that 150,000 patient – days were achieved but that 25% of the patient – days were self – pay (instead of 20%). Compute the net income. Compute the BEP.
25. The Frozen Delicacies Company specializes in preparing tasty main courses that are frozen and shipped to the finer restaurant in the Los Angeles area. When a diner orders the item, the restaurant heats and services it. The budget data for 20 x 2 :

|                              | Product             |              |
|------------------------------|---------------------|--------------|
|                              | Chicken Cordon Bleu | Veal Marsala |
| Selling price to restaurants | \$5                 | \$7          |
| Variable expense             | <u>3</u>            | <u>4</u>     |
| Contribution margin          | <u>\$2</u>          | <u>\$3</u>   |
| Number of units              | 250,000             | 125,000      |

The items are prepared in the same kitchens, delivered in the same trucks, and so forth. Therefore, the fixed costs of Br. 840,000 are unaffected by the specific products.

**Instructions:**

- a) Compute the planned net income for 20x2
- b) Compute the BEP in units, assuming that the planned sales mix is maintained.
- c) Compute the BEP in units if only veal were sold and if only chicken were sold.
- d) Suppose 90,000 units of veal and 270,000 units of chicken were sold. Compute the net income. Compute the new BEP if their relationship persisted in 20 x 2. What is the major lesson of this problem?

26. The president of Lucy, Inc. notes that the net income after income taxes last year was Br. 162, 000. Income taxes are at the rate of 40% of income before taxes. This profit was earned by selling 255, 000 units of a product at a price to Br. 6.00 per unit. By reducing the selling price to Br. 5.00 per unit, he believes that sales volume can be increased to 350, 000 units next year and those profits will be increased as a result. Fixed costs for the year are Br. 240,000.

**Instruction:**

- a) Will profits be increased by the reduction in the selling price and the expected increase in sales volume? Show computations.
  - b) With a selling price of Br.5.00 per unit, how much sales volume is needed to earn no less than Br.162, 000 after income taxes?
27. The plant manager of Ethio, Inc. has been searching for ways to improve profit margins by cutting the variable costs; the fixed costs have already been reduced to a minimum and are budgeted at Br. 315, 000 for the year. The product produced at this plant is sold for Br.12.50 per unit. The materials used in the production of this product line have cost Br.9.50 per unit but can be obtained from another source at a cost of Br.9.20 per unit. In the past each unit of product required 20 minutes of production time, and the additional variable cost per hour was Br. 6.00. The plant manager has found a way to reduce the time used in the production of each unit to 15 minutes.

**Instruction:**

- a) Compute the number of units that had to be sold under the old production method in order to breakeven.
  - b) Compute the number of units that must be sold under the revised production plan in order to break even.
  - c) How many units must be sold under the revised plan to earn a net income after taxes of Br. 252, 000? Income taxes are at the rate of 40% of income before taxes.
28. The Adama Hotel in Nazareth has 350 rooms with a fixed cost of Br. 192, 000 per month during the busy season. Room rates average Br. 50.00 per day with variable costs of Br. 10.00 per rented room per day. Assume a 30-day month. The hotel is subject to a 30% income tax rate.

**Instructions:**

- a) How many rooms must be occupied *per day* to break even?
- b) How many rooms must be occupied *per month* to make a monthly after tax profit of Br. 75, 600?
- c) Refer the original data. Assume that the Adama Hotel has these contribution margins per month from use of space in its hotel:

|                              |             |
|------------------------------|-------------|
| Lease shops in hotel         | Br. 20, 400 |
| Meals served, conventions    | 10, 600     |
| Dinning room and coffee shop | 9, 400      |
| Bar and cocktail lounge      | 7, 600      |

What average rate per day must the hotel charge to make an after tax income of Br.75, 600 per month. Assume occupancy averages 80% per day. Ignore the original average rate.

29. A social welfare agency has a government budget appropriation for 20x3 of Br. 900, 000. The agency's major mission is to help disabled persons who are unable to hold jobs. On the average, the agency supplements each person's other income by Br. 5, 000 annually. The agency's fixed costs are Br.290, 000. There are no other costs.

**Instruction:** Consider each situation independently unless otherwise told.

- a) How many disabled persons were helped during 20x3?
- b) For 20x4, the agency's budget appropriations have been reduced by 15%. If the agency continues the same level of monetary support per person, how many disabled persons will be helped in 20x4? Compute the percentage decline in the number of persons helped.
- c) Assume a budget reduction of 15%, as in requirement (b) above. The manager of the agency has discretion as to how much to supplement each disabled person's income. She does not want to reduce the number of persons served. On the average, what is the amount of the supplement that can be given to each person? Compute the percentage decline in the annual supplement.

30. Ganchu Company produces a single product. The cost of producing and selling a single unit of this product at the company's normal activity level of 8,000 units per month is as follows:

|                                                   |         |
|---------------------------------------------------|---------|
| Direct materials.....                             | Br.2.50 |
| Direct labor.....                                 | 3.00    |
| Variable manufacturing overhead.....              | 0.50    |
| Fixed manufacturing overhead.....                 | 4.25    |
| Variable selling and administrative expenses..... | 1.50    |
| Fixed selling and administrative expenses.....    | 2.00    |

The normal selling price is Br.15 per unit. The company's capacity is 10,000 units per month. An order has been received for 2,000 units at a price of Br12 per unit. This order would not disturb regular sales. If the order is accepted, by how much will the monthly profits be increased or decreased? The order would not change the company's fixed cost and would not require any additional variable selling and administrative expenses.

31. Selam's Home Center has two departments, A and B. The most recent income statement for the company follows:

|                        | Department          |                    | Total              |
|------------------------|---------------------|--------------------|--------------------|
|                        | A                   | B                  |                    |
| Sales                  | Br. 1,000,000       | Br. 4,000,000      | Br. 5,000,000      |
| Variable expenses      | <u>300,000</u>      | <u>1,600,000</u>   | <u>1,900,000</u>   |
| Contribution margin    | 700,000             | 2,400,000          | Br. 3,100,000      |
| Fixed expenses         | <u>900,000</u>      | <u>1,800,000</u>   | <u>2,700,000</u>   |
| Operating income(loss) | <u>Br.(200,000)</u> | <u>Br. 600,000</u> | <u>Br. 400,000</u> |

A study indicates that Br. 370,000 of the fixed expenses being charged to department A are sunk costs and allocated costs that will continue even if department A is dropped. In addition, the elimination of department A would result in a 10% decrease in the sales of department B. If department A is dropped, what will be the effect on the income of the company as a whole?