(Fitness Apparel Industry

Peak Performance Ltd manufactures specialized gym hoodies.

Last quarter:

Total sales revenue = $500,000

Selling price per unit = $50

Variable cost per unit = $20

Fixed costs per quarter = $150,000

Required

1. Compute the Contribution Margin (CM) ratio.
2. Compute the quarterly break-even point (units and sales $).
3. Units required to earn target profit of $75,000.
4. Margin of safety (value and %).
5. If sales increase by $100,000 next quarter (fixed costs unchanged), by what percentage will profit increase

(1) C.M Per unit = Selling Price - V.Cost Per unit

50 - 20 = 30

C.M ratio = $\frac{30}{50}$ X 100 = 60%

(2) BEP units = $\frac{\text{Fixed cost}}{\text{C.M Per unit}}$ = $\frac{150,000}{30}$ = 5,000 unit

BEP value = BEP units X Selling Price

BEP = 5,000 X 50 = 250,000 $

(3) target profit $= \frac{\text{Fixed Cost} + \text{target Profit}}{\text{C.M per unit}}$

75,000

$= \frac{150{,}000 + 75{,}000}{30} = \boxed{7500 \text{ units}}$

Margin of safety

= Actual unit sold − BEP units

Actual unit sold $= \frac{500{,}000}{50} = 10{,}000$ units

Margin of safety $= 10{,}000 - 5{,}000 = 5{,}000$ units

$= 5{,}000 \times 50 = 250{,}000$

% $= \frac{250{,}000}{500{,}000} \times 100 = 50\%$

old unit sold $= \frac{500{,}000}{50} = \boxed{10{,}000 \text{ units}}$

New unit sold $= 10{,}000 + \frac{100{,}000}{50} = \boxed{12{,}000}$

3 Old sales = 500,000 = 50 × 10,000

New sales = 600,000 = 50 × 12,000

Old variable cost = 10,000 × 20 = 200,000

New variable cost = 12,000 × 20 = 240,000

Old Fixed cost = New fixed cost

Old profit = Old sales − Old variable − Fixed

500,000 − 200,000 − 150,000

= 150,000

New profit = 600,000 − 240,000 − 150,000

= 210,000

Change profit % = $\frac{\text{New P} - \text{Old P}}{\text{Old P}} \times 100 = \frac{210,000 - 150,000}{150,000} \times 100 =$ **40%**

Exercise 2 — CVP Analysis

(Outdoor Gear Industry)

Summit Equipment Co. manufactures durable camping tents.

Last quarter:

Total sales revenue = £800,000

Selling price per unit = £200

Variable cost per unit = £120

Fixed costs per quarter = £240,000

Required

1. Compute the Contribution Margin (CM) ratio.
2. Compute the quarterly break-even point (units and sales £).
3. Units required to earn target profit of £160,000.
4. Margin of safety (value and %).
5. If sales increase by £50,000 next quarter (fixed costs unchanged), by what percentage will profit increase

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Solutions:

Exercise 3

Make or buy decisions

titan Tech Solutions manufactures 20,000 units per year of Component G-4 used in its robotics assembly.

The unit manufacturing cost of Component G-4 is as follows:

Direct materials: $25.00 per unit

Direct labour: $15.00 per unit

Variable manufacturing overhead: $5.00 per unit

Fixed manufacturing overhead: $10.00 per unit

Total cost per unit: $55.00

An external supplier has offered to supply Component G-4 for $48 per unit.

If the component is purchased:

All direct labour costs can be avoided.

40% of fixed manufacturing overhead related to the component can be avoided.

The remaining fixed overhead will continue regardless of the decision.

Required

1. Calculate the relevant cost per unit for the make-or-buy decision.
2. If Titan buys the component, the released capacity could be used to produce 4,000 additional circuit boards, each generating a contribution of $12 per unit. Taking this into account, calculate the total additional cost or saving of purchasing 20,000 units instead of making them.
3. Briefly explain whether the statement below is correct:

"Variable costs are always relevant, and fixed costs are always irrelevant

① Cost of saving = 1 × 20,000 = 20,000

② opportunity benefit Cost = 4,000 × 12
= 48,000

③ Total advantage of purchasing = total saving + opportunity benefit
= 20,000 + 48,000
= 68,000

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① Relevant cost per unit = D.M + D.L + V.OH + (Mix × F.OH)

Saving = [ ] − Supplier

② Cost of saving = Saving × units given

+ opportunity benefit = Capicity × Percent

total advantage of buying = Saving + opportunty benefit

Exercise4 — Make-or-Buy Decision

Swift Aerospace Ltd

Swift Aerospace Ltd manufactures 10,000 units per year of Part V-9 used in its engine cooling systems.

The unit manufacturing cost of Part V-9 is as follows:

Direct materials: £50.00 per unit

Direct labour: £30.00 per unit

Variable manufacturing overhead: £10.00 per unit

Fixed manufacturing overhead: £25.00 per unit

Total cost per unit: £115.00

An external supplier has offered to supply Part V-9 for £95 per unit.

If the component is purchased:

All direct labour costs can be avoided.

80% of fixed manufacturing overhead related to the component can be avoided.

The remaining fixed overhead will continue regardless of the decision.

Required

1. Calculate the relevant cost per unit for the make-or-buy decision.
2. If Swift buys the component, the released capacity could be used to produce 2,000 additional safety valves, each generating a contribution of £25 per unit. Taking this into account, calculate the total additional cost or saving of purchasing 10,000 units instead of making them.
3. Briefly explain whether the statement below is correct:

"Opportunity cost should be added to the cost of making the component."