Miss Grant for SRC General Secretary

UNIVERSITY OF CAPE COAST

COLLEGE OF HUMANITIES AND LEGAL STUDIES

SCHOOL OF BUSINESS

DEPARTMENT OF MARKETING AND SUPPLY CHAIN MANAGEMENT

OPERATION MANAGEMENT

TUTOTIAL SET I

1. Explain the difference between factor productivity and total factor productivity.

2. Explain 3 scopes of operations management

3. Fixed costs are ₵40,000 per year; variable costs are ₵50 per unit, and the selling price is₵ 90 each. Find the BEP.

4. Florida Citrus produced 40,000 boxes of fruit that sold for ₵3 per box. The total variable costs for the 40,000 boxes were ₵60,000, and the fixed costs were ₵75,000. (a) What was the break-even quantity? (b) How much profit (or loss) resulted?

5. The owner of a shop is contemplating adding a new product, which will require additional monthly payment of ₵6,000. Variable costs would be ₵2.00 per new product, and its selling price is ₵7.00 each.

   a) How many new products must be sold in order to break-even?
   b) What would the profit (loss) be if 1,500 units were sold in a month?
   c) How many units must be sold to realize a profit of ₵4,000?

6. Identify 4 assumptions of breakeven analysis

7. Identify 4 limitations of break- even analysis

8. Jack's Grocery is manufacturing a "store brand" item that has a variable cost of ₵ 0.75 per unit and a selling price of ₵1.25 per unit. Fixed costs are ₵ 12,000. Current volume is 50,000 units. The Grocery can substantially improve the product quality by adding a new piece of equipment at an additional fixed cost of ₵5,000. Variable cost would increase to ₵ 1.00, but their volume should increase to 70,000 units due to the higher quality product. Should the company buy the new equipment? What are the break-even points (₵ and units) for the two processes? Develop a break-even chart

9. A travel agency has an excursion package that sells for ₵ 125. Fixed costs are ₵ 80,000; and at the present volume of 1,000 customers, variable costs are ₵ 25, and profits are ₵ 20,000. (a) What is the break-even

point volume? (b) Assuming that fixed costs remain constant, how many additional customers will be required for the agency to increase profit by ₡ 1000??

10. A manager has the option of purchasing one, two, or three machines. Fixed costs and potential volumes are as follows:

Number of machines	Total annual fixed costs (Rs.)	Corresponding range of output
1	9600	0 to 300
2	15000	301 to 600
3	20000	601 to 900

Variable cost is Rs.10 per unit, and revenue is Rs.40 per unit. (a) Determine the break-even point for each range. (b) If projected annual demand is between 580 and 660 units, how many machines should the manager purchase?

11. Given the pay-off table below showing the profit (present value Rs.in lakhs), a firm might expect in a foreign country for three alternative factory investments (X, Y, and Z) under different levels of inflation. Economists have assigned probabilities of 0.2, 0.3, 0.4, and 0.1 to the possible inflation levels A, B, C and D, respectively. Find the preferred investment alternative using criteria of (a) Maximax, (b) Maximin, (c) Laplace, (d) Minimax regret, and (e) Expected monetary value

		State of nature: Amount of inflation		
	A = 2%	B = 5%	C = 10%	D = 15%
Build factory X	10	30	50	120
Build factory Y	40	50	60	70
Lease plant Z	10	40	80	10

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Rev. Wonderful

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TUTOTIAL SET 3

1. Component 007 is one of the thousands of items kept in the stores of B.Com Ltd. Usage of the component is expected to be at the rate of about 30,000 units per year. Management believes that the maximum weekly usage is about 750 units and minimum weekly usage about 400 units. Experience has shown that supplies delivers on average 3 weeks after order is placed but it can be as much as 4 weeks or as little as 2 weeks. Assuming that six orders will be made during the year. Suggests the Re-order, Maximum, and Minimum Levels of Component 007.

2. Annual demand of materials J600 is 100,000 units. One unit of item J600 cost GH¢4 per annum to hold in stock. Ordering cost of the item J600 are GH¢20 per order.

a. What should the re-order quantity be in order to minimise stock administrative cost?

b. Re-order level

c. Maximum level

d. Minimum Level

Calculation of Control Levels

1. Re-order Level = Max Usage x Max Lead Time

2. Maximum Level = Re-order Level +EOQ – (Min. Usage x Min. Lead Time)

3. Minimum Level = Re-order Level – (Avg. Usage x Avg. Lead Time)

4. Re-order Quantity or EOQ =

$$Q = \sqrt{\frac{2DS}{H}}$$

where:

Q = EOQ units
D = Demand in units (typically on an annual basis)
S = Order cost (per purchase order)
H = Holding costs (per unit, per year)

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Department of Marketing and Supply Chain Management
SBU 301: Operations Management
Quiz 2

Instructions: Answer all questions **Time allowed: 45 Minutes**

1. The new Health-care facility is targeted to serve seven census tracts in Amamoma. Table 1 shows the coordinates for the center of each census tract, along with the projected populations, measured in thousands. Customers will travel from the seven-census tract centres to the new facility when they need health-care. Two locations considered for the new facility are at (5.5, 4.5) and (5, 2), which are the centres of census tracts C and D. Details of seven census tract centres, co-ordinate distances along with the population for each centre are given below.

   If we use the population as the loads and use rectilinear distance, which location is better in terms of its total load-distance score? (**10 Marks**)

Table 1

No.	Census Tract	(x, y)	Population
1	A	(2.5, 4.5)	2
2	B	(2.5, 2.5)	5
3	C	(5.5, 4.5)	10
4	D	(5, 2)	7
5	E	(8, 5)	10
6	F	(7, 2)	20
7	G	(9, 2.5)	14

2. Explain any **Four** tangible reasons why firms may want to have a global/foreign location (**10 Marks**)
3. Using relevant examples explain the following: Agglomerating and Deagglomerating (**5 marks**)

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