Unit-3

Location planning to maximize benefit of location

Need for location decisions

- marketing strategy
- growth
- Cost of doing business
- depletion of resources.

Strategic importance of location decisions

- location decisions are closely related to an organization's strategies
- Eg- low cost producer will locate near the market of raw material.
- strategy of increasing profits by increasing market share may result in high-traffic areas
- Strategy for convenience to customers may result in many locations where customers can purchase.

Nature of location decisions

- Strategic importance of location decisions long-term commitment/costs, impact on investment, revenues & operations, supply chains
- Objectives of location decisions - profit potential, no single location may be better than others, identify several location from which to choose, location criteria may depend upon where a business is in the supply chain
- Location options - expand existing facilities, add new facilities, move, do nothing

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Making location decisions

- Decide on the criteria
- Identify important factors
- Develop location alternatives
- Evaluate alternatives
  - identify general region
  - Identify small number of community alternative
  - identify site alternatives
- Evaluate & make selection

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Location decision factors:-

- Regional factors - location of raw materials, location of market, labor factors, climate & taxes
- Community consideration - quality of life, services, attitudes, utilities, developer support, environmental regulations
- Site related factors - land, legal, transportation, environmental

Evaluating locations

- Cost - Profit - volume analysis
  * determine fixed & variable cost
  * plot total cost
  * determine lowest total cost

Assumptions (FC are fixed, VC are linear, output can be closely estimated, only one product involved)

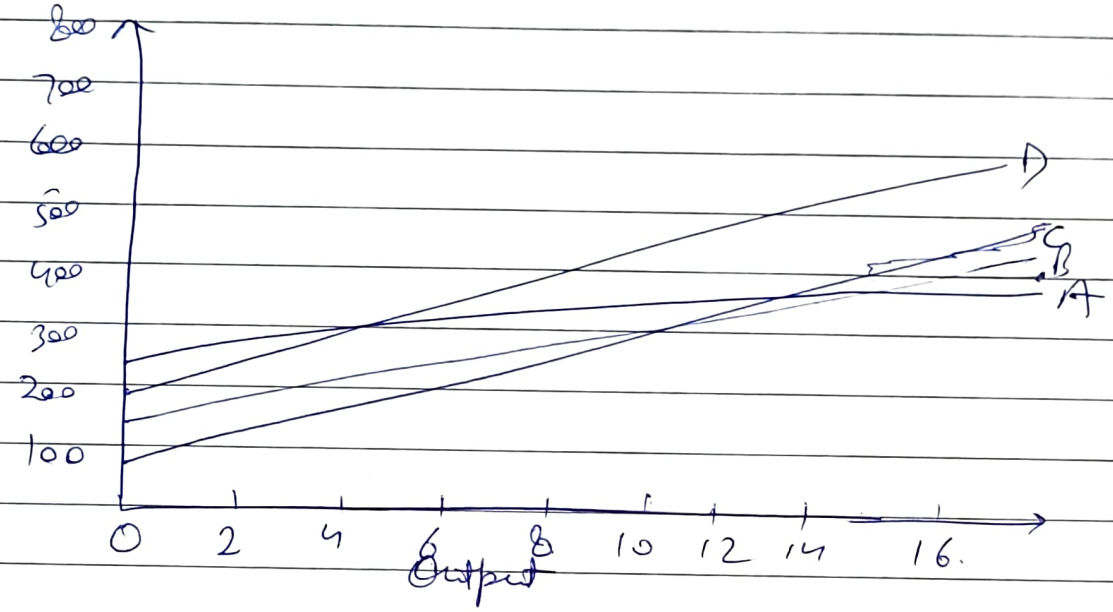
Ques.

Location	FC	VC
A	2,50,000	11
B	1,00,000	30
C	1,50,000	20
D	2,00,000	35

(a) Plot TC on graph
(b) Identify range of output for which each alternative is superior (has lowest cost TC)
(c) If expected output at selection location is 8000 units, which location would have lowest TC?

Location	FC	VC	TC
A	2,50,000	11 (10,000)	3,60,000
B	1,00,000	30 (10,000)	4,00,000
C	1,50,000	20 (10,000)	3,50,000
D	2,00,000	35 (10,000)	5,50,000

(a)



(b) D is not superior. Exact range can be determined by finding output level at which line B & C & CA cross. So,

(B) (C)

$1,00,000 + 300Q = 1,50,000 + 200Q$

$Q = 5000$

(C) (A)

$1,50,000 + 200Q = 2,50,000 + 100Q$

$Q = 11,111.$

Profit = Q (Revenue − variable cost) − fixed cost

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★ • factor rating cost

Ques

factor	Weight	Alt 1	Alt 2	WA1	WA2
Locn:	.10	100	60	10	6
TV	.05	80	80	4	4
RC	.40	70	90	28	36
S	.10	86	92	8.6	9.2
L	.20	40	70	8.0	14
OC	.15	80	90	12	13.5
				70.6	82.7 (Better)

★ • Center of gravity method

Ques.

Destination	X	Y
1	2	2
2	3	5
3	5	4
4	8	5

$\bar{X} = \frac{\Sigma X}{n} = 4.5$

$\bar{Y} = \frac{\Sigma Y}{n} = 4$

Ques.

Dest	X	Y	Q	XQ	YQ
1	2	2	800	1600	1600
2	3	5	900	2700	4500
3	5	4	200	1000	800
4	8	5	100	800	500
			2000	6100	7400

$\bar{X} = \frac{\Sigma XQ}{\Sigma Q} = \frac{6100}{2000} = 3.05$

$\bar{Y} = \frac{\Sigma YQ}{\Sigma Q} = \frac{7400}{2000} = 3.7$