BREAK-EVEN POINT

Q. DEFINE THE TOTAL FIXED COST, TOTAL VARIABLE COST AND TOTAL COST WITH SUITABLE GRAPHS

Q. EXPLAIN THE CONCEPT OF BREAK-EVEN POINT WITH SUITABLE GRAPH

Q. DEFINE THE TOTAL FIXED COST, TOTAL VARIABLE COST AND TOTAL COST WITH SUITABLE GRAPHS

FIXED COST
Rent and Lease Costs
Depreciation
Insurance Premiums:
Property Taxes
Loan Interest
Maintenance and
Repairs etc.

VARIABLE COST
Raw Materials
salaries of workers
Energy Costs
Packaging Costs
etc.

Q. DEFINE THE TOTAL FIXED COST, TOTAL VARIABLE COST AND TOTAL COST WITH SUITABLE GRAPHS

➤**Total Fixed Cost (TFC):** Costs incurred by a firm in order to acquire the fixed factors for production like cost of machinery, buildings, depreciation, etc. In short run, the fixed cost remains the same through all output levels. These are also called **overhead costs**.

➤**Total Variable Cost (TVC):** Costs incurred by a firm on variable inputs for production. Variable cost also goes up as increase in quantities of variable inputs. It is also called '**Prime cost**'. Eg. wages of labour, fuel expenses, etc.

➤**Total Cost (TC): Total cost = Total fixed cost + Total variable cost (TC = TFC + TVC)**

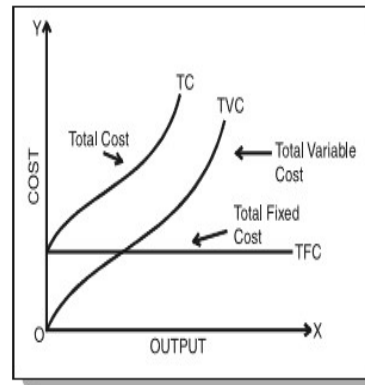Fig. 5 : Short run Total Cost Curves

WHAT IS AVERAGE COST, AVERAGE VARIABLE COST, AVERAGE FIXED COST AND MARGINAL COST
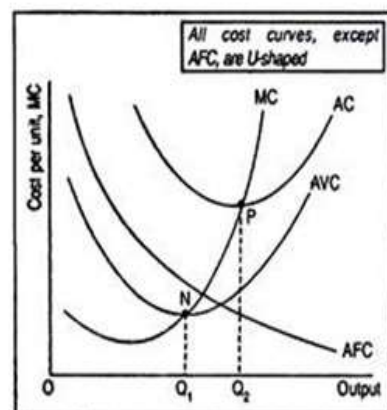
Average Cost (AC):

Average Cost is the total cost of production divided by the quantity of output produced. It represents the cost **per unit of output**.

Average Cost (AC) = TC/ Q

Average Variable Cost (AVC):

Average Variable Cost is the total variable cost of production divided by the quantity of output produced. It represents the variable cost **per unit of output**.

Average Variable Cost (AVC) = TVC/ Q

WHAT IS AVERAGE COST, AVERAGE VARIABLE COST, AVERAGE FIXED COST AND MARGINAL COST

Average Fixed Cost (AFC):

Average Fixed Cost is the fixed cost of production divided by the quantity of output produced. It represents the fixed cost per unit of output.

Average Fixed Cost (AFC) = Total Fixed Cost / Quantity of Output

Marginal Cost (MC):

Marginal Cost is the additional cost incurred by producing one additional unit of output. Marginal cost is essential for determining the optimal level of production.

Marginal Cost (MC) = Change in Total Cost / Change in Quantity of Output

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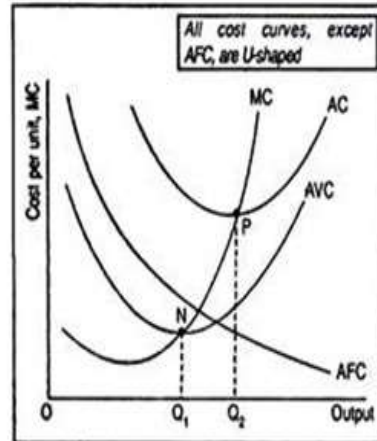
Q.IMPLICIT AND EXPLICIT COST, VARIABLE AND FIXED COST.

Explicit Costs:

❑ Explicit costs are the direct, tangible, and out-of-pocket expenses incurred by a firm to produce goods or services. These costs can be accounted for in financial statements.

❑ Examples: wages paid to employees, raw material costs, rent for the business premises, utility bills, and other expenses that involve actual cash outlays.

❑ For example, if a company pays $1,000 for raw materials, $500 for labor, and $200 for rent in a month, the explicit costs for that month would be $1,000 + $500 + $200 = $1,700.

Implicit Costs:

❑ Implicit costs are the opportunity costs associated with using resources owned by the firm instead of selling or renting them to someone else.

❑ These costs are not reflected in financial statements, as no actual cash transactions occur.

❑ For example, if a business owner uses their own property to run their business instead of renting it out to someone else at Rs. 50000, rental income that could have been earned.

Q. WHAT ARE OPPORTUNITY COST, REAL COST, HISTORICAL COST, SHORT RUN COST

Opportunity Cost:

❖ Opportunity cost refers to the potential value or benefit that is lost when an alternative option is chosen over another.

❖ It's what you give up to choose something else. This concept is essential in economics and decision-making because resources are limited, and choosing one option often means sacrificing another.

Real Cost:

❖ The real cost, also known as the true cost or actual cost, is the total expense associated with producing or consuming a particular good or service

❖ It includes both the explicit costs (direct monetary expenses) and the implicit costs (opportunity costs) involved in a decision.

Q. WHAT ARE OPPORTUNITY COST, REAL COST, HISTORICAL COST, SHORT RUN COST

Historical Cost:

❖ Historical cost is an accounting term (recorded on the balance sheet)that represents the original cost of an asset

❖ It does **not** reflect the current market value or inflationary changes that might have occurred over time.

Short Run Cost:

❖ Short-run costs refer to the expenses incurred by a firm in the production process when at least one factor of production (usually capital) is fixed

❖ Other factors, like labor and raw materials, may be variable and can be adjusted to change the level of output.

It's important to note that all of these cost concepts play crucial roles in various economic decisions and analyses, helping individuals and businesses make informed choices and understand the implications of their actions.

Break-Even Analysis

❑ It's also known as Cost-Volume—Profit Analysis.

❑ Break-Even Point refer to the level of sales at which TR=TC and Profit is equal to zero.

❑ At this point no profit or loss is incurred .The firm merely covers its total costs

❑ B-E Point shows TR covering TC But the Shut down point shows the TR cover only TVC.

BREAK –EVEN CHART

OUTPUT IN UNITS (SOLD)	TFC	TVC	TC	TR Price Rs. 150/-
0	1000	–	1000	0
10	1000	1000	2000	1500
20	1000	2000	3000	3000
30	1000	3000	4000	4500
40	1000	4000	5000	6000
50	1000	5000	6000	7500

Break-Even Point Linear
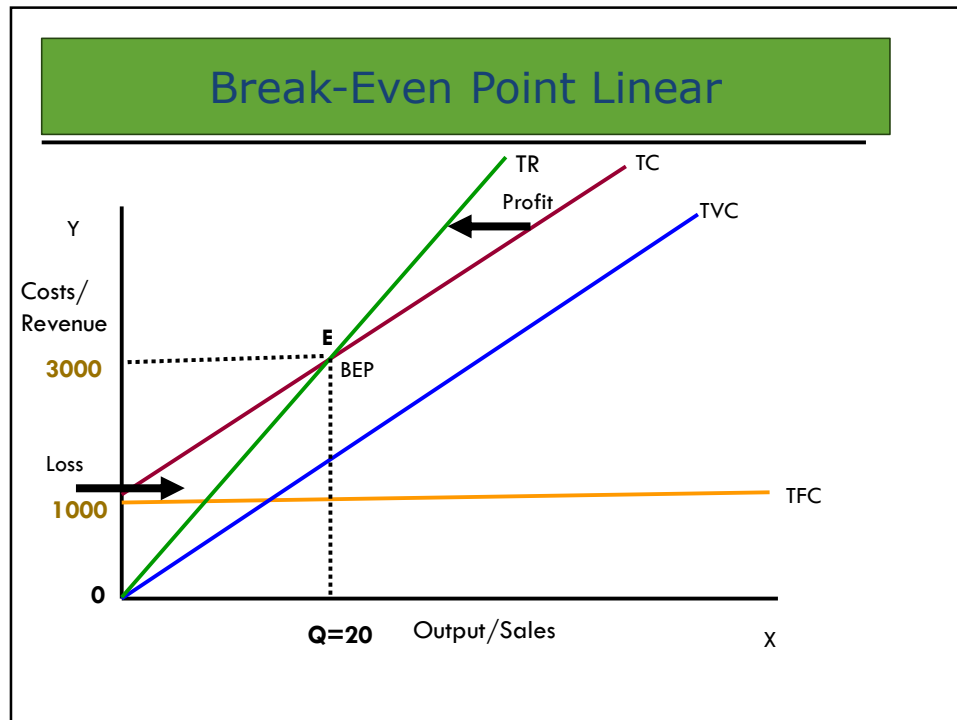
DETERMINATION OF B-E POINT

A) The B-E Sales volume can be measured by following formula.

S= F / P-V

B) If we multiply the sales volume in units (S) with the price per unit then we will get the sales revenue in amount.

S*=S X P

C) The B-E sales in amount can also be measured by dividing fixed cost by C.M.R.

S*=F/C

C=P-V/P X 100 %

D) Examples :-

1) Firm A has fixed operating cost of Rs. 3000, P=Rs. 12 , VC=Rs. 6

VARIABLES INFLUENCHING THE B-E POINT

A) CHANGES IN PRICE

1) **Rise** in price – **Decreased** in B-E Point
2) **Fall** in price – **Rise** in B-E Point.

Example :-

1) Firm A has fixed operating cost of Rs. 3000, **P=Rs. 12** , VC=Rs. 6

   S = F/P-V

   =3000/12-6

   = 500 Units or Rs. 6000

✓ **Rise in price – Decreased in B-E Point**

   S = 3000/14-6

   = 375 Units or Rs. 5250

✓ **Fall in Price –Rise in B-E Point**

   S = 3000/10-6

   = 750 Units or Rs. 7500

B) CHANGES IN FIXED COST

Example :-

1) Firm A has fixed operating cost **of Rs. 3000**, P=Rs. 12 , VC=Rs. 6

   S= F/P-V,

   = Rs. 3000/12-6

   = 500 Units or Rs. 6000

✓ **Rise in TFC to 4500 - Rise in B-E Point**

   S= F/P-V,

   = 4500/12-6

   = 750Units or Rs.9000

✓ **Fall in TFC to 2400 – Fall in B-E Point**

   S= F/P-V,

   = 2400/12-6

   = 400 Units or Rs. 4800

C) CHANGES IN VARIABLE COST PER UNIT

1. **Rise in VC– Rise in B-E Point**
2. **Fall in VC – Fall in B-E Point.**

Example :-

1) Firm A has fixed operating cost of Rs. 3000, P=Rs. 12 , VC=Rs. 6

   S= F / P - V

   = 3000/12-6

   = 500 Units or Rs. 6000

✓ **Rise in VC- Rise in B-E Point**

   Rs. 3000/12-8= 750Units or Rs.9000

✓ **Fall in VC– Fall in B-E Point**

   Rs.2400/12-4= 375 Units or Rs. 4500

MANAGERIAL USE OF BREAK –EVEN ANALYSIS

1. Useful For Decision Making

2. Useful For Management Planning

3. Return on Capital Employed

4. Cost Recovery

5. Profit Forecast

6. Determine sales & Marketing Strategies

7. Capacity Utilization

LIMITATION

1. This Analysis used only if Firm's is Producing Single Product.

2. It applied only if the firm has maintained good accounting system.

3. Not effective for long run.

4. It assumes future projection which can be made on the basis of the past record.

5. 5) More useful if the costs can be clearly classified into fixed & Variable costs.

Q. If price is Rs. 8, AVC = Rs. 6 and TFC = Rs. 50,000

i. What is the break- even quantity?

ii. What happens to the break- even quantity when price increases to Rs. 10, AVC and TFC remaining the same?

iii. What happens to the break- even quantity when AVC increases to Rs. 7, Price and TFC remaining same?

Ans: To calculate the break-even quantity, we can use the following formula:

Break-even quantity = Total Fixed Costs / (Price - Average Variable Cost)

Given:

Price (P) = Rs. 8

Average Variable Cost (AVC) = Rs. 6

Total Fixed Costs (TFC) = Rs. 50,000

i. Calculate the break-even quantity:

Break-even quantity = 50,000 / (8 - 6)

= 50,000 / 2

= 25,000 units.

Q. If price is Rs. 8, AVC = Rs. 6 and TFC = Rs. 50,000

ii. What happens to the break-even quantity when the price increases to Rs. 10, AVC, and TFC remaining the same?

Ans:

New Price (P) = Rs. 10

New break-even quantity = TFC / (P - AVC)

$$= 50{,}000 / (10 - 6)$$

$$= 50{,}000 / 4$$

$$= 12{,}500 \text{ units}$$

When the price increases to Rs. 10, the break-even quantity decreases to 12,500 units.

Q. If price is RsAns:

iii. What happens to the break-even quantity when AVC increases to Rs. 7, Price, and TFC remaining the same?

ANS:

New Average Variable Cost (AVC) = Rs. 7

New break-even quantity = TFC / (P - AVC)

$$= 50{,}000 / (8 - 7)$$

$$= 50{,}000 / 1$$

$$= 50{,}000 \text{ units}$$

When the AVC increases to Rs. 7, the break-even quantity increases to 50,000 units.

Q. **If price is Rs. 10, AVC = Rs. 7 and TFC = Rs. 60,000**

i. What is the break- even quantity?

ii. What happens to the break- even quantity when price increases to Rs. 12, AVC and TFC remaining the same?

iii. What happens to the break- even quantity when AVC increases to Rs. 8, Price and TFC remaining same?

Ans: To calculate the break-even quantity, we can use the following formula:

Break-even quantity = Total Fixed Costs / (Price - Average Variable Cost)

Given:

Price (P) = Rs. 10

Average Variable Cost (AVC) = Rs. 7

Total Fixed Costs (TFC) = Rs. 60,000

Calculate the break-even quantity:

Break-even quantity = 60,000 / (10 - 7)

$$= 60,000 / 3$$

$$= 20,000 \text{ units}$$

Let's calculate the break-even quantities for each case:

ii) What happens to the break-even quantity when the price increases to Rs. 12, AVC, and TFC remaining the same?

AVC = Rs. 7, TFC = Rs. 60,000

New Price (P) = Rs. 12

Break-even quantity = Total Fixed Costs / (Price - Average Variable Cost)

New break-even quantity = 60,000 / (12 - 7)

$$= 60,000 / 5$$

$$= 12,000 \text{ units}$$

When the price increases to Rs. 12, the break-even quantity decreases to 12,000 units.

Let's calculate the break-even quantities for each case:

iii) What happens to the break-even quantity when AVC increases to Rs. 8, Price, and TFC remaining the same?

Price (P) = Rs. 10, TFC = Rs. 60,000............... remains the same

New Average Variable Cost (AVC) =   **Rs. 8**

Break-even quantity = Total Fixed Costs / (Price - Average Variable Cost)

New break-even quantity = 60,000 / (10 - **8)**

= 60,000 / 2

= 30,000 units

When the AVC increases to Rs. 8, the break-even quantity increases to 30,000 units.

HOMEWORK:

Q. If price is Rs. 9, AVC = Rs. 7 and TFC = Rs. 55,000

i. What is the break- even quantity?

ii. What happens to the break- even quantity when price increases to Rs. 10, AVC and TFC remaining the same?

iii. What happens to the break- even quantity when AVC increases to Rs. 8, Price and TFC remaining same?

Ans:

Given the following data calculate TFC, TVC, MC, AFC, AVC and AC. Show your working.

Q	0	1	2	3	4	5	6	7
TC	50	62	69	74	80	88	99	113

			TC-TFC	TCn-TCn-1	TFC/Q	TVC/Q	TC/Q
Q	TC	TFC	TVC	MC	AFC	AVC	AC
0	50	50	0	****	0	0	0
1	62	50	12	12	50	12	62
2	69	50	19	7	25	9.5	34.5
3	74	50	24	5	16.67	8	24.67
4	80	50	30	6	12.5	7.5	20
5	88	50	38	8	10	7.6	17.6
6	99	50	49	11	8.33	8.17	16.5
7	113	50	63	14	7.14	9	16.12