MODULE 1

Introduction to the subject: Micro and Macro Economics, Relationship between Science, Engineering, Technology and Economic Development. Production Possibility Curve, Nature of Economic Laws.

MODULE 2

Time Value of Money: concepts and application. Capital budgeting; Traditional and modern methods, Payback period method, IRR, ARR, NPV, PI (with the help of case studies)

MODULE 3

Meaning of Demand. Law of Demand, Elasticity of Demand; meaning, factors effecting it and its practical application and importance. Demand forecasting (a brief explanation)

MODULE 4

Meaning of Production and factors of production, Law of variable proportions and returns to scale. Internal and external economies and diseconomies of scale. Concepts of cost of production, different types of costs; accounting cost, sunk cost, marginal cost, Opportunity cost. Break even analysis, Make or Buy decision (case study). Relevance of Depreciation towards industry.

MODULE 5

Meaning of market, types of market, perfect competition, Monopoly, Monopolistic, Oligopoly. (main features). Supply and law of supply, Role of demand and supply in price determination.

MODULE 6

Indian Economy, nature and characteristics. Basic concepts; fiscal and monetary policy, LPG, Inflation, Sensex, GATT, WTO and IMF. Difference between Central bank and Commercial banks

TEXT/ REFERENCES BOOKS

1. **Jain T.R., "*Economics for Engineers*", VK Publication**
2. **Chopra P. N., "*Principle of Economics*", Kalyani Publishers**
3. **Dewett K. K., "*Modern economic theory*", S. Chand**
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8. **Gupta Shashi K., "*Management Accounting*", Kalyani Publication**

Central Problem of all Economies

Economies

What to produce and in what quantities?

- Problem of allocation of resources.

How to produce?

- Related to choice of technique of production.

For whom to produce?

- Problem of distribution of total production among the owners of the factors of production.

Production

Production means "creation of utility".

- **It also refers to creation of goods (or performance of services) for the purpose of selling them in the market.**
- **There was a time when production meant the fabrication of material goods only.**
- **A tailor's activity was considered to be production but the activity of the trader who sold clothes to the purchasers was not considered as production.**
- At present, both material goods and services are considered as production.
- Production must be for the purpose of selling the produced goods (or, services) in the market.

Factors of Production

- **The goods and services with the help of which the process of production is carried out, are called factors of production.**
- Economists talk about four main factors of production : **land, labour, capital and entrepreneurship (or organization).**
- **They are also called as the inputs of production. On the other hand, the goods produced with the help of these inputs, are called as the output.**

Factors of Production

1. **Land (natural resources)**
   It refers to all natural resources. All natural resources either on the surface of the earth or below the surface of the earth or above the surface of the earth is Land. One uses the land to produces goods. It is the primary and natural factor of production. All gifts of nature such as rivers, oceans, land, climate, mountains, mines, forests etc. are land. **The payment for land is rent.**
2. **Labor (manual or mental)**
   All human effort that assists in production is labour. This effort can be mental or physical. It is a human factor of production. It is the worker who applies their efforts, abilities, and skills to produce.
   The payment for labour is the wage.
3. **Capital (man made resources)**
   Capital refers to all manmade resources used in the production process. It is a produced factor of production. It includes factories, machinery, tools, equipment, raw materials, wealth etc.
   The payment for capital is interest.
4. **Entrepreneurship (intellectual resources)**
   An entrepreneur is a person who brings other factors of production in one place. He uses them for the production process. He is the person who decides
   - What to produce
   - Where to produce
   - How to produce

   A person who takes these decisions along with the associated risk is an entrepreneur.

The Law of Variable Proportions

- **Is the answer to the question: How will total output change when all inputs except one are fixed?**
- **Two ways to illustrate the answer:**
  - Production schedule (chart)
  - Production function (graph)
- **Usually, as in this example, labor is the variable input; all other variables are held constant**
- **Primary, secondary and tertiary**
- **Agriculture, bike, service**
- **Short run, long run-some fixed, some variable**

Production Function

- **The law of variable proportion analyses the input output relationship in the short run through the marginal implication. It studies the production function with one variable input and other inputs remains constant**
- **Production function relates inputs to outputs. It describes the technological relation between the inputs that a firm uses and the output that it produces.**
- **It describes the flow of inputs to flow of output**
- **Returns to a factor**
- **Returns to scale**

Production function with time period analysis

- **Economists describe production function as being affected by time. When firms plan to increase their production , they have two options**
- **Increase all the factors in same proportion, known as scale of production. This is a long run analysis**
- **Increase the amount of some factors keeping others as constant. This is a short run analysis**
- **When the firm decide to increase output by changing only a variable factor, they have to face the law of variable proportions**

Definition of Law of Variable Proportion

- **Law of variable Proportion refers to the behavior of output as the quantity of one factor is increased, keeping the quantity of other factor fixed and further it states that the marginal product and average product will eventually decline**
- **As more and more units of a factor of production are added to fixed factor, the total product rises, at first more in proportion to increase in variable factor, then less in proportion and finally decreases**

Key Concept: Marginal Product

- **Marginal product is the amount that total output increases by adding one more unit of an input**
- **We can calculate Marginal Product as**

  MP = Change in output / change in input

- **Marginal product is calculated by subtracting the most recent total product (# of units produced) from the new total product**

Hypothetical Example and its Assumptions

- **In our example we illustrate the assumption as:-**
  - Land is fixed factor
  - Labour is variable factor
  - Technology is fixed
  - Wheat is grown on a Farm
  - Labour is equally efficient

The Stages of Law of variable Proportions

- **The behavior of output when the varying quantity of one factor is combining with a fixed quantity of the other can be divided into 3 distinct stages. In order to understand these three stages it is better to graphically illustrate the production function with one factor variable.**
- **There are three stages of this law.**
  - Increasing Returns
  - Diminishing Returns
  - Negative Returns

Table 1

Land and Capital (Units of fixed factor)	Workers (Units of variable factor)	Total Product (TP) (tons of wheat)	Marginal Product (MP)	Average Product (AV)	Stages of Variable Proportions
10	0	0	-	-	
10	1	6	6	6	Increasing returns
10	2	14	8	7	
10	3	24	10	8	
10	4	32	8	8	
10	5	38	6	7.6	Decreasing returns
10	6	42	4	7	
10	7	44	2	6.2	
10	8	44	0	5.5	
10	9	42	-2	4.8	(negative returns)

Calculations of Total Product, Average Product and Marginal Product

Total Product

Total Product is defined as the sum total volume of Production or total number of Units produced with the given fixed and variable inputs.

Average Product

Average product is defined as the ratio between total product and number of units of variable factor.

AP = TP / Units of Variable Factor

Marginal Product

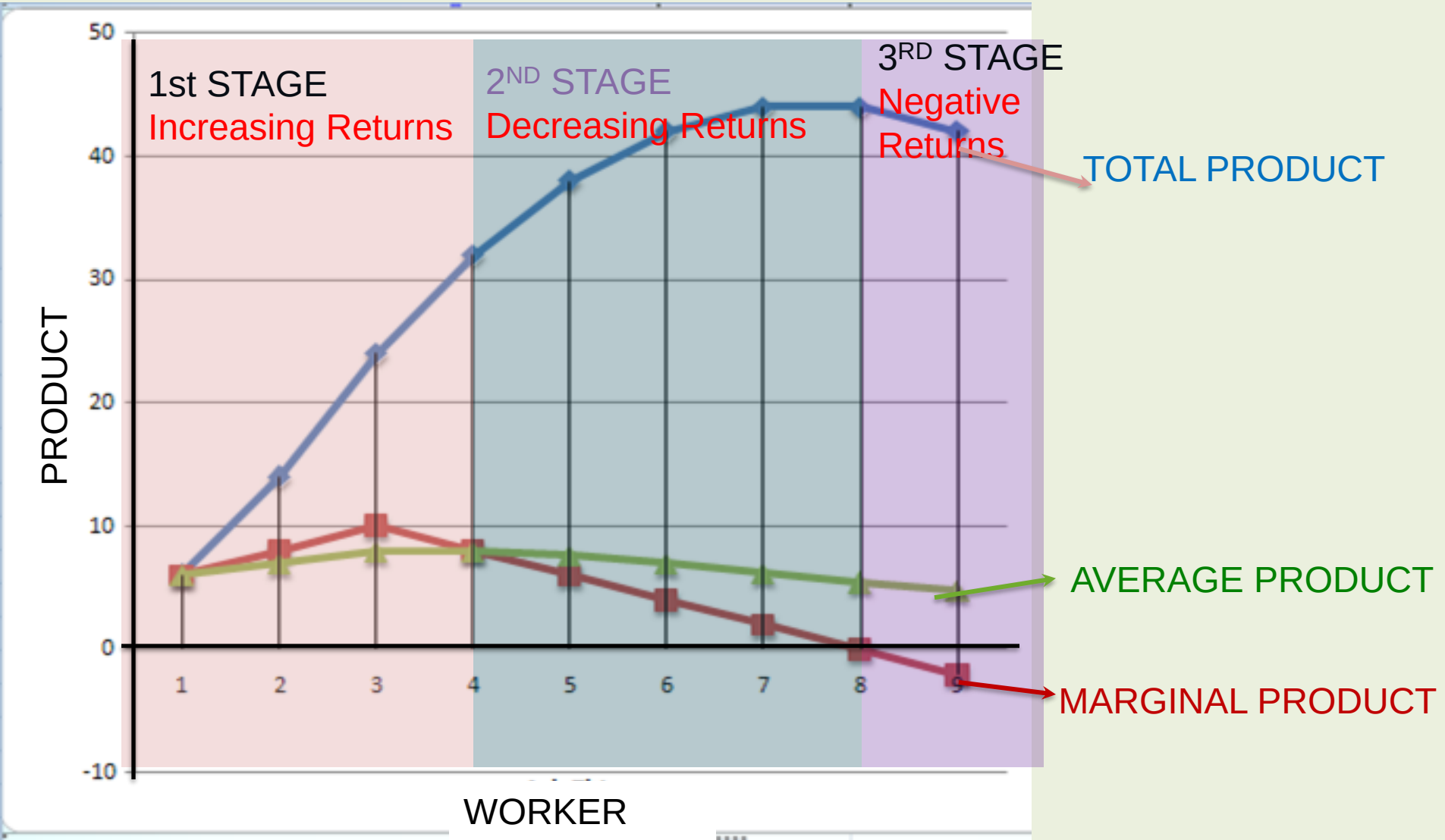
Marginal Product is defined as the Increment in total output due to the use of an extra unit of labour.

MP = Change in Total Product / Change in Variable Factor

OR

$$MP = \Delta TP / \Delta L$$

Graphical Representation of Three Stages of Law of Variable Proportions



Three Stages of Law of Variable Proportions

Law of variable proportions consists of three phases.

- ✓ **Increasing returns** In many cases, the increase in variable factor is initially followed by increasing marginal returns i.e. total output increases more than proportionally to the variable factor. This phase does no last longer. Soon the Law of diminishing starts
- ✓ **Decreasing returns** If increase in variable factor is continued, the marginal product starts falling i.e. the law of decreasing sets in. This law is more universal and lasts longer. No business can escape this law. Sooner or later every economic activity comes under this law
- ✓ **Negative returns** When a business experiences decreasing returns and the quantity of variable factor is further increased, the marginal returns becomes negative

Important Results and Relationships

Relation between Marginal and Total Quantity

- **Marginal quantity shows the rate of change of total quantity**
- **When marginal quantity increases it means the total quantity increases at increasing rate, while if marginal quantity is decreasing, (but positive) total quantity increases at decreasing rate**
- **When total quantity increases, marginal quantity is positive**
- **When total quantity is maximum, marginal quantity is zero**
- **When total quantity falls, marginal quantity is negative**

Important Results and Relationships

Relation between Average and Marginal Quantity

- **When average quantity is increasing, marginal quantity is greater than average quantity.**
- **When average quantity is decreasing, marginal quantity is less than average quantity.**
- **When average quantity is neither increasing nor decreasing, marginal quantity is equal to average quantity**

Important Results and Relationships

Relation between Total and Average Quantity

- **Average quantity is equal to the total quantity divided by the number of units of a factor employed**

  Average = Total / Units

- **When average is zero, total quantity is zero**

Summary

- **The Law of Variable Proportions states that while varying only one input, output will go through three stages:**
  - Increasing returns
  - Diminishing returns (ideal)
  - Negative returns

Conclusions

- **While adding units of an input (labor), the marginal product goes through three stages:**
- **Stage I (Increasing returns): Marginal product increases throughout**
  - This means that every additional unit increases productivity as well as total output
  - **Underutilization of Fixed Factor**
  - **Increase in efficiency**
  - **Better coordination between factor**
  - This is shown on the graph by an increasing slope of total Product curve

Conclusions

- **Stage II (diminishing returns): Marginal product decreases throughout.**
  - This means that every additional unit decreases productivity, though total output still increases.
  - This is shown on the graph by a decreasing positive slope of total product curve
- **Stage III (negative returns): Marginal product is negative throughout.**
  - This means that each additional unit actually decreases total output.
  - A waste of money and resources.

This is shown on the graph by a negative slope

Conclusions

- **The greatest productivity is at the end of Stage I**
- **The greatest output is at the end of Stage II**
- **Therefore, Stage II is ideal, because there is a balance between productivity and total output**

	SHORT RUN PRODUCTION FUNCTION	LONG RUN PRODUCTION FUNCTION
Meaning	Short run production function alludes to the time period, in which at least one factor of production is fixed.	Long run production function connotes the time period, in which all the factors of production are variable.
Law	Law of variable proportion	Law of returns to scale
Scale of production	No change in scale of production.	Change in scale of production.
Factor-ratio	Changes	Does not change.
Entry and Exit	There are barriers to entry and the firms can shut down but cannot fully exit.	Firms are free to enter and exit.

Law of Returns to Scale

In the long run all factors of production are variable. No factor is fixed. Accordingly, the scale of production can be changed by changing the quantity of all factors of production.

Definition

- “The term returns to scale refers to the changes in output as all factors change by the same proportion.” Koutsoyiannis
- “Returns to scale relates to the behaviour of total output as all inputs are varied and is a long run concept”.

Returns to scale are of the following three types:

- 1. Increasing Returns to scale.
- 2. Constant Returns to Scale
- 3. Diminishing Returns to Scale

- **Explanation:**
- In the long run, output can be increased by increasing all factors in the same proportion. Generally, laws of returns to scale refer to an increase in output due to increase in all factors in the same proportion. Such an increase is called returns to scale.
- **Suppose, initially production function is as follows:**
- P = f (L, K)

Now, if both the factors of production i.e. labour and capital are increased in same

$$P_1 = f(x\,L, xK)$$

1. If P_1 increases in the same proportion as the increase in factors of production i.e., $\frac{P_1}{P} = x$, it will be constant returns to scale.

2. If P_1 increases less than proportionate increase in the factors of production *i.e.*, $\frac{P_1}{P} < x$, it will be diminishing returns to scale.

3. If P_1 increases more than proportionate increase in the factors of production, *i.e.*, $\frac{P_1}{P} > x$, it will be increasing returns to scale. Returns to scale can be shown with the help of table 8.

Table 8. Showing different stages of return to scale

Units of Labour	Units of capital	%age increase in Labour & Capital	Total Product	%age increase in TP	Returns to scale
1	3	–	10	–	
2	6	100%	30	200%	Increasing
3	9	50%	60	100%	
4	12	33%	80	33%	Constant
5	15	25%	100	25%	
6	18	20%	120	10%	Decreasing
7	21	16.6%	130	8.3%	

- **1. Increasing Returns to Scale:**
- Increasing returns to scale or diminishing cost refers to a situation when all factors of production are increased, output increases at a higher rate. It means if all inputs are doubled, output will also increase at the faster rate than double. Hence, it is said to be increasing returns to scale. This increase is due to many reasons like division external economies of scale.

In figure 8, OX axis represents increase in labour and capital while OY axis shows increase in output. When labour and capital increases from Q to Q_1, output also increases from P to P_1 which is higher than the factors of production i.e. labour and capital.

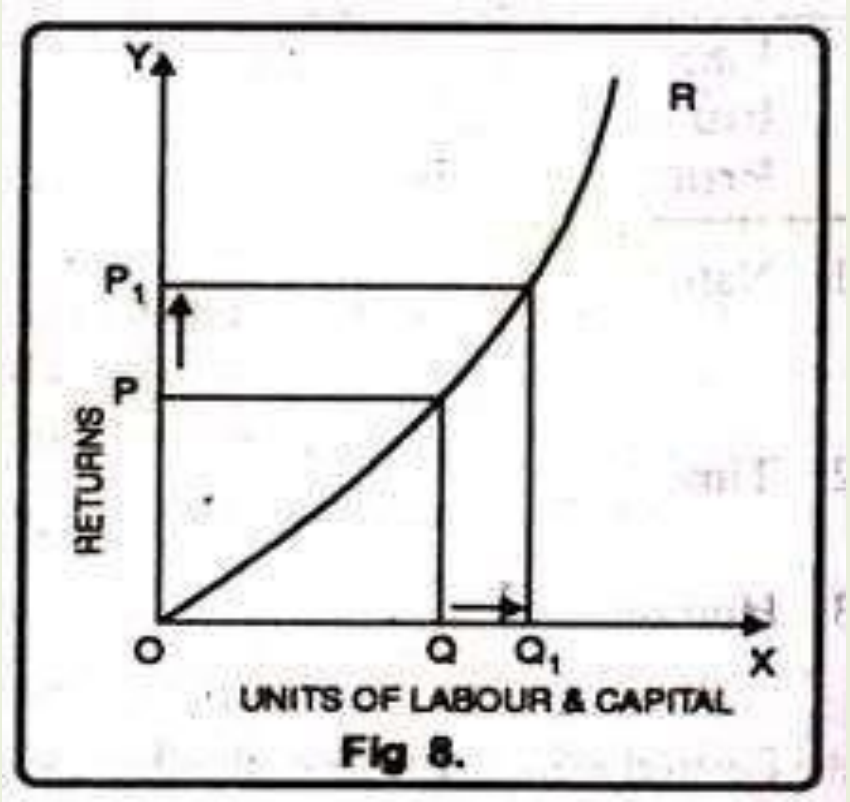


Fig 8.

Diminishing Returns to Scale:

Diminishing returns or increasing costs refer to that production situation, where if all the factors of production are increased in a given proportion, output increases in a smaller proportion. It means, if inputs are doubled, output will be less than doubled. If 20 percent increase in labour and capital is followed by 10 percent increase in output, then it is an instance of diminishing returns to scale.

In this diagram, diminishing returns to scale has been shown. On OX axis, labour and capital are given while on OY axis, output. When factors of production increase from Q to Q_1 (more quantity) but as a result increase in output, i.e. P to P_1 is less. We see that increase in factors of production is more and increase in production is comparatively less, thus diminishing returns to scale apply.

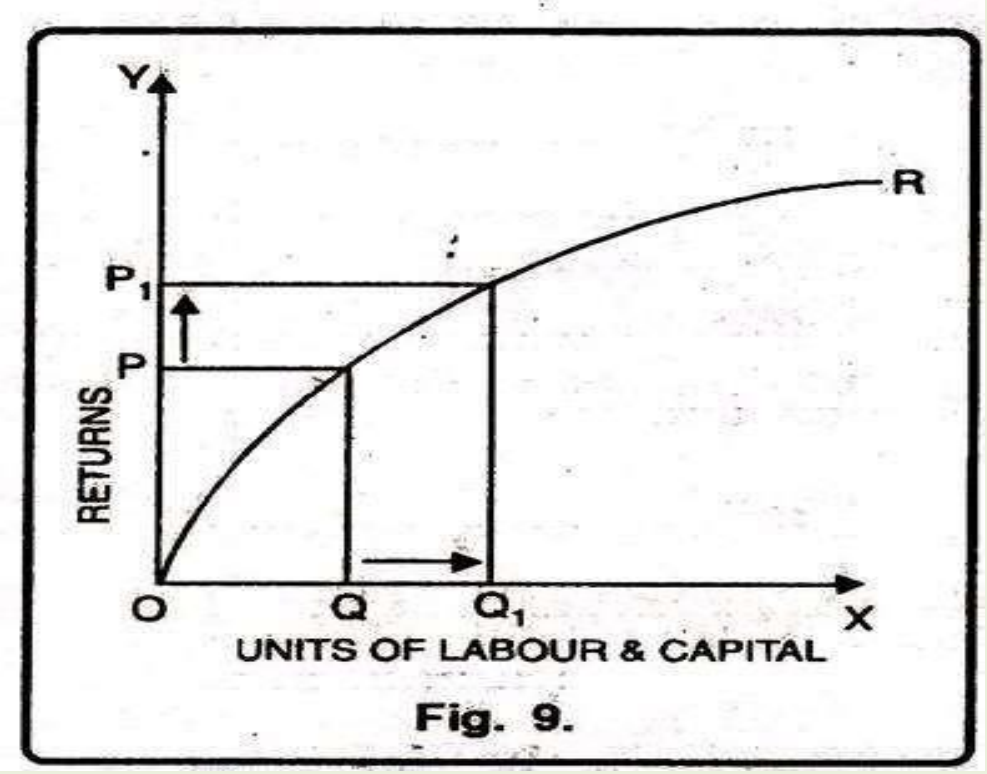


Fig. 9.

Constant Returns to Scale:

- Constant returns to scale or constant cost refers to the production situation in which output increases exactly in the same proportion in which factors of production are increased. In simple terms, if factors of production are doubled output will also be doubled.
- In this case internal and external economies are exactly equal to internal and external diseconomies. This situation arises when after reaching a certain level of production, economies of scale are balanced by diseconomies of scale.

Constant Returns to Scale

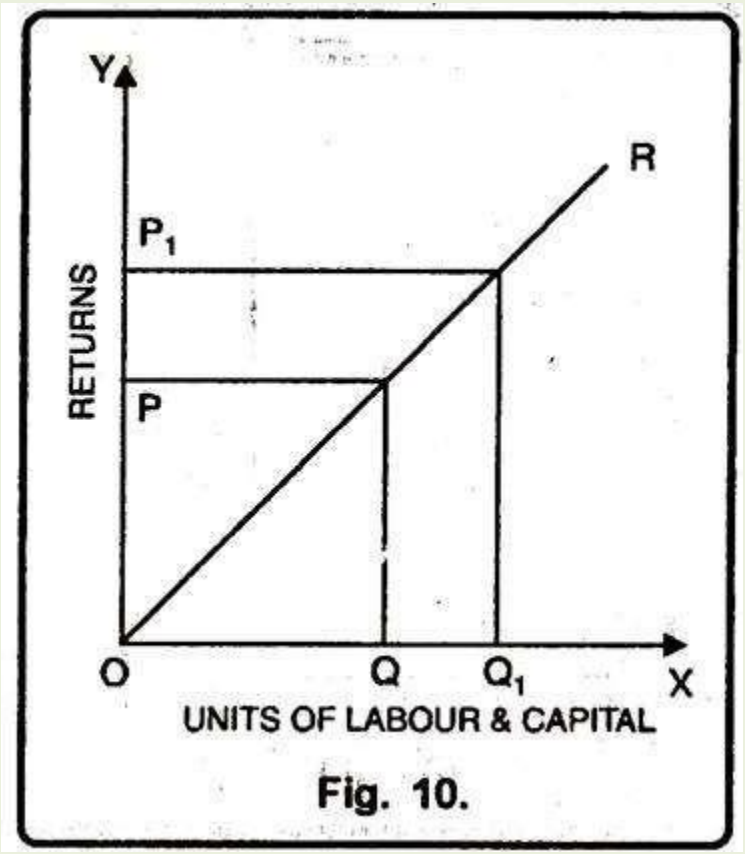
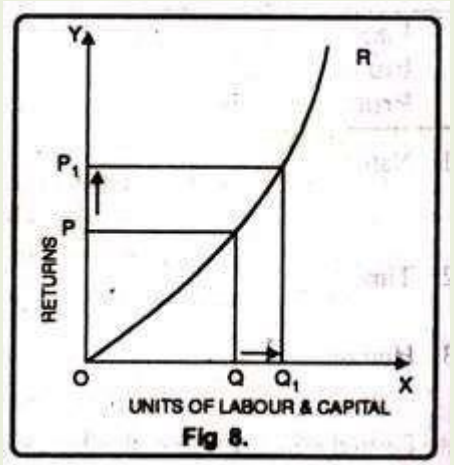


Fig. 10.



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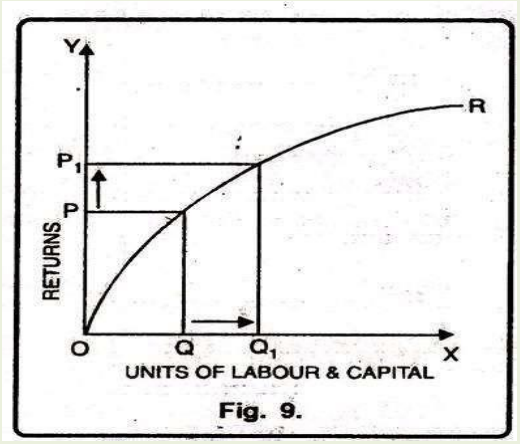

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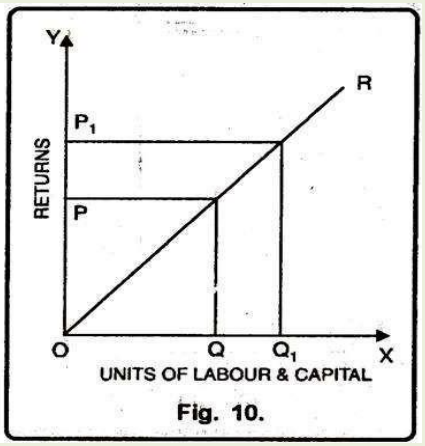


Fig. 10.

Internal Economies of Scale

Types of economies of scale	Example
Production / Technical Economies	• Large scale producers can employ techniques that cannot be used by a small scale producer. • A large firm could use computers and technology to replace employees on a production line. • Able to transport bulk materials. • Mass production means that unit costs are lower.
Purchasing / Marketing Economies	• Large businesses can employ specialist staff. • Bulk buying – being able to buy goods in bulk lowers the unit price. • Advertising costs can be spread.
Financial Economies	• Easier for large firms to raise capital. • Better lending terms and lower interest rates – easier to borrow money. • Risk is spread over more products. • Greater potential finance from retained profits. • Administration costs can be spread.
Managerial Economies	• More specialised management can be employed, saves business money because they are more efficient.
Risk-bearing Economies	• Large firms can afford to take risks with new products / services because other parts of the businesses are still profitable.

Internal Economies

Internal economies are economic advantages that enable a firm to get proportionately larger output than incremental factor inputs. These are different for different firms and depends on the size of operation of the firm.

i. Technical Economies – optimum scale of plant and technology employed on the same.

i. *Economies of Superior Techniques* – as the size of the firm grows it s easier to, it employs larger and more efficient technology to improve productivity.

ii. *Economies of Increased Dimensions* – larger firms enjoy reduced cost per unit of production. Firm can do backward integration of production process to conserve and gain better control.

iii. *Economies of Linked processes* – different firms join hand to produce goods as one form. e.g. a dedicated supplier manufacturing goods only for the buyer firm.

Internal Economies

ii. Managerial Economics

i. *Professional Managers* – specialists are employed by the firm to improve the efficiency of production.

ii. *Mechanical Devices* – larger firms introduce modern appliances and use relevant software for better operations. It is very important as managerial decisions are influenced by quality and timelines of information received.

iii. *Better Coordination* – this is facilitated by employing expert managers and latest supporting technology for exchanging information.

Internal Economies

iii. Financial Economies

i. Financial Reputation – large organisations would have established credit worthiness in the market. Such firms have better bargaining power while resourcing funds.

ii. Economical Financing – owing to better credit rating and huge amounts of borrowing, large firms raise funds at much lower cost .

iii. Retention of Profit– large firms generally plough back the profit contributing to better financial performance.

Internal Economies

iv. Marketing Economies

i. *Control over Distribution* – a better managed company establishes clear channel of distribution of its products and monitor them regularly. It may set up its own retail outlets.

ii. *Advertising* – promotional activities and wide spread advertisement helps create awareness in consumers – imperative for consumer goods. But even Industrial companies advertising to build it brand image in the market have also started

iii. *Competition* – a successful firm has well defined competitive strategy – be it pricing or quality or advertising.

Internal Economies

v. **Commercial Economies**

   i. *Large scale buying* – bulk buying empowers firm with better bargaining capability.

   i. *Economy in Selling* – a number of product lines help companies establish better and sail smoothly through difficult times.

vi. **Transport & Warehousing Economies** – and storage result in bulk transportations significant cost savings

vii. **Division of Labour and Specialisation –** a firm performs better if it clearly defines the functions of employees and recruits employees with suitable skill sets.

Internal Economies

viii. Risk - Bearing Economies

Larger firms are usually more resilient towards the ups and downs of an economy. It usually diversifies its risk by producing range of products, catering to different markets and has a large vendor base. It also has business contingency plans in terms of alternative processes to be used.

Internal Economies

Internal Economies of Scale (IEoS)

Technical economies i.e. containerization

Specialist capital machinery / technology

Purchasing economies (monopsony power)

Large scale application of the division of labour

Using specialist managers across the supply chain

Financial economies e.g. lower interest rates on loans

Risk-bearing economies from diversification

Network economies – which helps to lower marketing costs

External Economies

- **Economies which accrue to the firms as a result of the expansion in the output of the whole industry are termed external economies.** They are external in the sense that they accrue to the firms not out of its internal situation but from outside it i.e., from expansion of the industry.
- **Jacob Vinor has defined external economies as 'those which accrue to particular concerns as the result of expansion of output by the industry as a whole and which are independent of their own individual output'.**
- Following are the main forms of external economies.

External Economies

(i) Economies of Localisation/Concentration - When an industry develops in a particular region, it brings with it all the advantages of localization. All the firms of this industry get the following

- main advantages:
- ***(a) Easy availability of skilled manpower;***
- ***(b) Improvement in transportation and communication facilities;***
- ***(c) Availability of banking, insurance and marketing services;***
- ***(d) Better and adequate sources of energy-electricity and power;***
- ***(e) Development of ancillary industries.***

External Economies and Diseconomies

Examples of External Economies of Scale

University Research Departments helping to fun research

Transport Networks lower logistics costs

Relocation of Suppliers to the centre of production

External economies of scale involve changes **outside** of the business i.e. they result from the expansion of the entire industry of which the business is a member. They lower unit costs for many / all firms inside the market

Influx of human capital – highly skilled workers

Agglomeration economies are important.
Businesses in similar industries **cluster together** and attract an influx of skilled talent which then provides **human capital** to expanding businesses.

Factors Influencing Diseconomies of Scale

- Lack of Coordination
- Communication Challenges
- Organizational Complexity
- Loss of Control and Coordination
- Inflexibility and Rigidity

External Economies

(ii) **Economies of Disintegration/Specialisation – The industry can have advantages from the economies of specialization when each firm specializes in different processes necessary for producing a product.** For instance in a cloth industry some firms can specialise in spinning, others in printing etc. As a result of specialisation all the firms in the industry would be benefited.

(iii)Economies related to Information Services – Firms in an industry can jointly set-up facilities for conducting research, publication of trade journals and experimentation related to industry.

- Thus, besides providing market information, the growth of the industry may help in discovering and spreading improved technical knowledge.

(iv) Economies of Producer's Organisation – Firms of an industry may form an association. Such an association can have their own transport, own purchase and marketing departments, own research and training centres. This will help to reduce costs of production to a great extent and shall be mutually beneficial.

Concepts of Cost

- **The term "Cost" is used in many sense and hence has many concepts.** All these need to be properly and clearly understood.

Real Costs

- real cost included the following two basic elements:
- ***Exertions Of All Kinds Of Labour;***
- ***Waiting And Sacrifices Required For Saving The Capital It Is More A Psychological Concept And Cannot Be Measured.***
- ***Therefore, It Is Not Applied In Actual Practice.***

Economic Costs or Production Cost

- **The total expenses incurred by a firm in producing a commodity are generally termed as its economic costs.** Economic costs are generally referred to as production costs as well.

What is Cost of Production?

Cost of production refers to the total cost incurred by a business to produce a specific quantity of a product or offer a service. Production costs may include things such as labor, raw materials, or consumable supplies. In economics, the cost of production is defined as the expenditures incurred to obtain the factors of production such as labor, land, and capital, that are needed in the production process of a product.

For example, the production costs for a motor vehicle tire may include expenses such as rubber, labor needed to produce the product, and various manufacturing supplies. In the service industry, the costs of production may entail the material costs of delivering the service, as well as the labor costs paid to employees tasked with providing the service.

Types of Costs of Production

1. Fixed Cost- These costs are also known as an overhead cost. These costs materialize once the financial activity of a business starts. The fixed price includes taxes, salaries, rent, depreciation cost, labour cost, interest, energy cost etc.

2. Variable Cost- This cost fluctuates, and will decrease or increase according to the volume of the production. This cost includes packaging cost, cost of raw material, fuel, and other material related to production.

3. Total cost

Total cost encompasses both variable and fixed costs. It takes into account all the costs incurred in the production process or when offering a service.

4. Average cost

The average cost refers to the total cost of production divided by the number of units produced. It can also be obtained by summing the average variable costs and the average fixed costs. Management uses average costs to make decisions pricing its products for maximum revenue or profit.

The goal of the company should be to minimize the average cost per unit so that it can increase the profit margin without increasing costs.

Types of Costs of Production

5. Marginal cost: it is the additional cost incurred in the production of one more unit of a good or service. It is derived from the variable cost of production, given that fixed costs do not change as output changes, hence no additional fixed cost is incurred in producing another unit of a good or service once production has already started. For example, the marginal cost of producing an automobile will generally include the costs of labor and parts needed for the additional automobile but not the fixed costs of the factory that have already been incurred.

Example

Output	Total cost (£)	Marginal cost (£)
10	400	
11	700	300
12	800	100
13	1000	200
14	1500	500

Marginal Cost (MC)

(iv) Marginal Cost (MC) — Marginal cost is the increase in total cost resulting from one unit increase in output. In short, it may be called incremental cost. Thus,

- **MC = dTC/dQ**
- Or, M Cn = TCn - TC n-1
- Here, MC = Marginal Cost
- TCn = Total Cost of n units of output
- TC n-1 = Total Cost of n-1 units of output

Marginal Cost (MC)

- **Since a change in total cost is caused only by a change in total variable cost, marginal cost may also be defined as the increase in total variable cost resulting from one unit increase of output.** Thus, marginal cost has nothing to do with the fixed costs.
- Suppose the total variable cost of 4 units of output is ` 52 and the total variable cost of 3 units is ` 40, then the marginal cost will be ` 12 (52-40).

Accounting cost

•Accounting costs include actual expenses and depreciation expenses for capital equipment, which are determine for tax purposes. Accountants tend to take a retrospective look at a firm's finances as they have to keep track of assets and liabilities and evaluate past performance.

•**Cost Accounting** is a business practice in which we record, examine, summarize, and study the company's cost spent on any process, service, product or anything else in the organization. This helps the organization in cost controlling and making strategic planning and decision on improving cost efficiency.

•Accountants and economists both include actual outlays, called explicit costs, in their calculations. Explicit costs include wages, salaries, etc. For accountants, explicit costs are important because they involve direct payments by a company.

Accounting cost

Learn about the difference between Economic cost and Accounting cost.

An economist thinks of cost differently from an accountant, who is concerned with the financial statements.

Economists, on the other hand, take a forward-looking view of the firm. They are concerned with what costs are expected to be in the future, and how the firm would be able to rearrange its resources to lower its costs and improve its profitability. They must, thus, be concerned with opportunity costs.

For example, consider a firm that owns a building, and, therefore, pays no rent for office space. Does this mean that the cost of office space is zero for the firm? Though an accountant might treat this cost as zero, an economist would consider the rent that the firm could have earned by leasing the office space to another company.

Sunk Cost

•A sunk cost is an irretrievable cost. Once spent, the sunk cost cannot be recovered when the firm leaves the industry.
•A sunk cost is incurred in the past and cannot be changed.
•A non-sunk cost is a cost that will only occur if a particular decision is made.

Examples of sunk costs

•Advertising expenditure. If you advertise a new product, that money is gone and cannot be retrieved.
•Research into a new product. If the product doesn't work out, you are left with nothing you can sell on.
•Labour costs. If a firm sets up a new business, it will need to employ people to work and manage, these costs cannot be recovered.

Importance of sunk costs

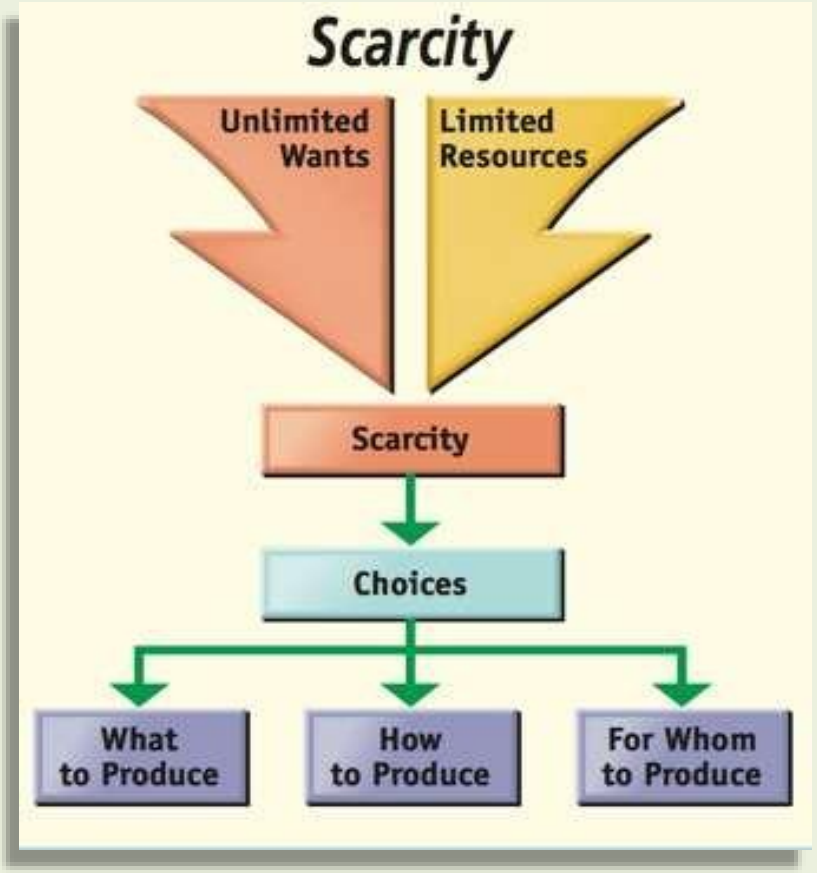
If an industry has high sunk costs – then this creates a barrier to entry. A firm will be more reluctant to enter the industry if it needs to spend a lot of money – that it can't get back if it needs to leave. This is why incumbents might spend a lot on advertising – to create stronger brand loyalty. For example, Coca-Cola and Pepsi both have huge advertising budgets. This makes it very difficult for any new firm to enter the market and produce their own cola.

Opportunity Cost

Opportunity Cost

- **The concept of opportunity cost occupies a very important place in modern economic analysis.**
- ***Factors of production are scarce in relation to wants.***
- When a factor is used in the production of a particular commodity, the society has to forgo other goods which this factor could have produced.
- ***This gave birth to the notion of opportunity cost in economics.***
- Suppose a particular kind of steel is used in manufacturing war-goods, it clearly implies that the society has to give up the amount of utensils that could have been produced with the help of this steel.
- ***Hence we can say that the opportunity cost of producing war-goods is the amount of utensils forgone.***
- Opportunity cost is the cost of the next-best alternative that has been forgone.

Opportunity Cost



Opportunity Cost

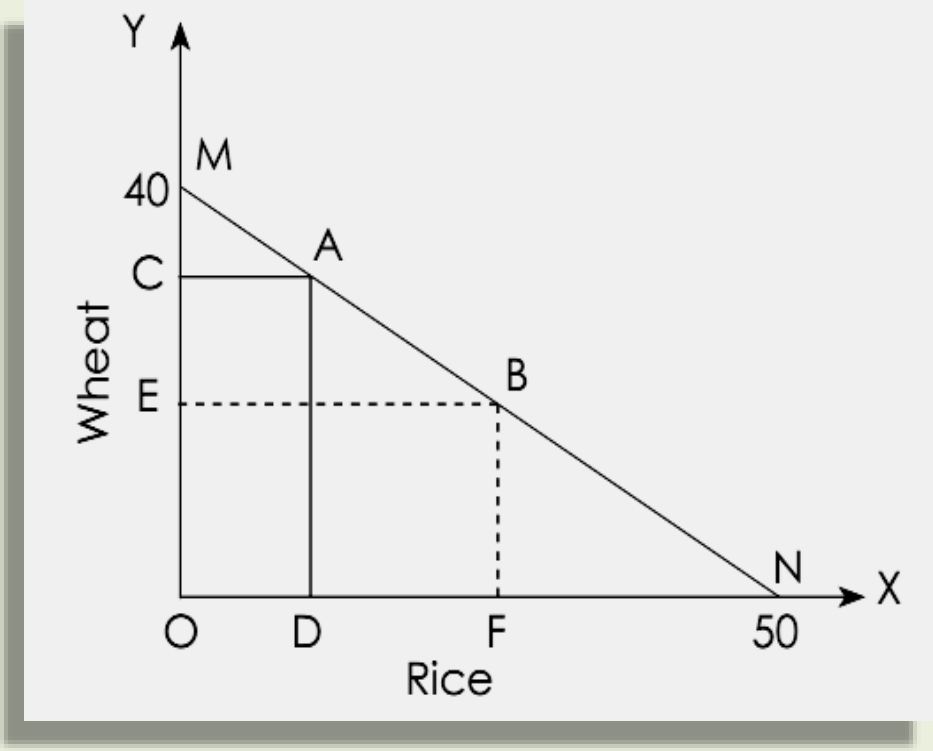
- From the meaning of opportunity cost two important points emerge:
- **(i) The opportunity cost of anything is only the next-best alternative foregone and not any other alternative.**
- **(ii) The opportunity cost of a good should be viewed as the next-best alternative good that could be produced with the same value of the factors which are more or less the same.**

Opportunity Cost

- **The concept of opportunity cost can better be explained with the help of an illustration.** Suppose a price of land can be used for growing wheat or rice. If the land is used for growing rice, it is not available for growing wheat.

Opportunity Cost

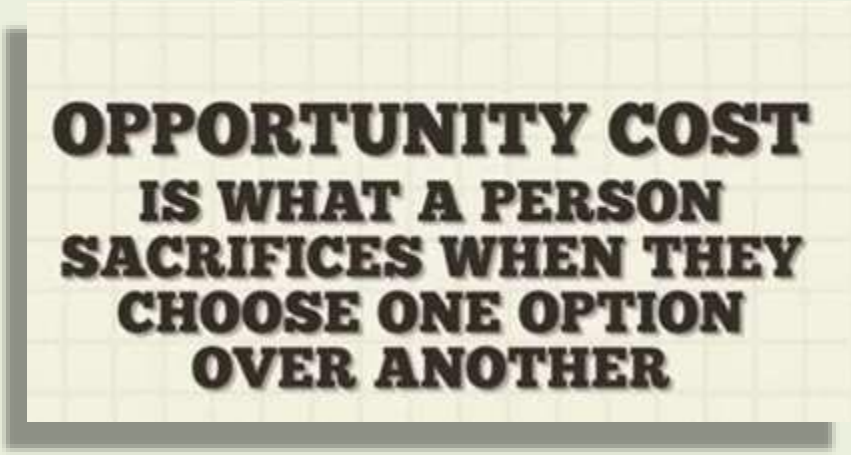
- Therefore the opportunity cost for rice is the wheat crop foregone. This is illustrated with the help of the following diagram:



Opportunity Cost

Suppose the farmer, using a piece of land can produce either 50 quintals (ON) of rice or 40 quintals (OM) of wheat.

- If the farmer produces 50 quintals of rice (ON), he cannot produce wheat.
- **Therefore the opportunity cost of 50 quintals (ON) of rice is 40 quintals (OM) of wheat.**
- The farmer can also produce any combination of the two crops.
- Thus, opportunity cost for a commodity is the amount of other next-best goods which have to be given up in order to produce additional amount of that commodity.

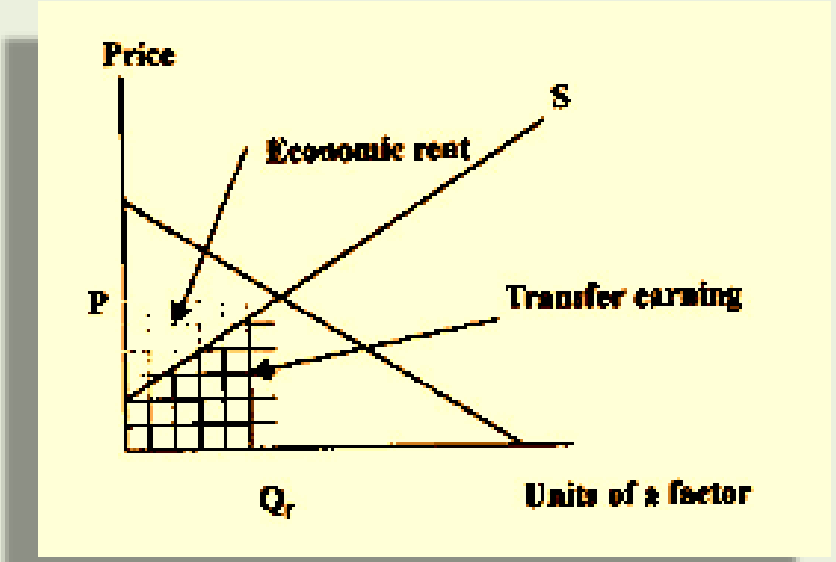


Applications of Opportunity Cost

Applications of Opportunity Cost

- The concept of opportunity cost has been widely used by modern economists in various fields. The main
- applications of the concept of opportunity cost are as follows –
- **(i) Determination of factor prices - The factors of production need to be paid a price that is at least** equal to what they command for alternative uses. If the factor price is less than factor's opportunity cost, the factor will quit and get employed in the better-paying alternative.
- **(ii) Determination of economic rent - The concept of opportunity cost is widely used by modern economists in the determination of economic rent.**

Applications of Opportunity Cost



Applications of Opportunity Cost

(iii)Decisions regarding consumption pattern - The concept of opportunity cost suggests that with given money income, if a consumer chooses to have more of one thing, he has to have more of one thing, he has to have less of the other. He cannot increase the consumption of all the goods simultaneously.

(iv)Decisions regarding production plan - With given resources and given technology if a producer decides to produce greater amount of one commodity, he has to sacrifice some amount of another commodity. Thus on the basis of opportunity costs a firm makes decisions regarding its production plan.

(v)Decisions regarding national priorities - With given resources at its command a country has to plan the production of various commodities. The decision will depend on national priorities based on opportunity costs.

Break-Even Analysis

A break-even analysis is an economic tool which is used to determine the cost structure of a company or the number of units needs to be sold to cover the cost. Break-even is a circumstance where a company neither makes a profit nor loss, but recovers all the money spent.

Break-even analysis is used to examine the relation between the fixed cost, variable cost, and revenue. Usually, an organization with low fixed cost will have a low break-even point of sale.

Components of Break-Even Analysis:

Fixed Cost- These costs are also known as an overhead cost. These costs materialize once the financial activity of a business starts. The fixed price includes taxes, salaries, rent, depreciation cost, labour cost, interest, energy cost etc.

Variable Cost- This cost fluctuates, and will decrease or increase according to the volume of the production. This cost includes packaging cost, cost of raw material, fuel, and other material related to production.

Break-Even Analysis Formula

Break-Even Point = Fixed Cost / Price Per Cost – Variable Cost

Example of Break-Even Analysis
Company X sells a pen. The company first determined that the fixed costs of Company X are a lease, property tax, salaries, which make a sum of Rs. 1,00,000. The variable cost linked with manufacturing one pen is Rs. 2 per unit. So, the pen is sold at a premium price of Rs. 10.
Therefore, to determine the break-even point of Company X premium pen will be:
Break-Even Point = Fixed Cost / Price Per Cost – Variable Cost
= 1,00,000 / (12 – 2) = 10,000
Therefore, given the variable costs, fixed costs, and the selling price of the pen, Company X would need to sell 10,000 units of pens to break even.

Importance of Break-Even Analysis

Manages the Size of Units to be Sold- With the help of break-even analysis, the company or the owner comes to know how much units need to be sold to cover the cost. The variable cost and the selling price of an individual product and the total cost are required to evaluate the break-even analysis.

Budgeting and Setting Targets- Since a company or the owner know at which point a company can break-even, it makes it easy for them to fix a goal and set a budget for the firm accordingly.

Manage the Margin of Safety- In financial breakdown, the sales of a company tends to decrease. The break-even analysis helps the company to decide the least number of sales required to make profits.

Monitors and Controls Cost- Companies profit margin can be affected by the fixed and variable cost; therefore, with break-even analysis, the management can detect if any effects are changing the cost.

Helps Design Pricing Strategy- Break-even point can be affected if there is any change in the pricing of a product. For example, if the selling price is raised, the quantity of the product to be sold to break -even will be reduced. Similarly, if the selling price is reduced, a company needs to sell extra to break-even.

Make-or-Buy Decision

A make-or-buy decision also called the outsourcing decision is an act of choosing between manufacturing a product in-house or purchasing it from an external supplier.

While making the decision, both qualitative and quantitative factors must be considered. Examples of the qualitative factors in make-or-buy decision are: control over quality of the component, reliability of suppliers, impact of the decision on suppliers and customers, etc.

The quantitative factors are actually the incremental costs resulting from making or buying the component. For example: incremental production cost per unit, purchase cost per unit, production capacity available to manufacture the component, etc.

Understanding Make-or-Buy Decisions

Regarding **in-house production**, a business must include expenses related to the purchase and maintenance of any production equipment and the cost of production materials. Make costs can include the additional labor required to produce the items, storage requirements within the facility, storage costs overall, and the proper disposal of any remnants or byproducts from the production process.

Buy costs related to purchasing the products from an outside source must include the price of the good itself, any shipping or importing fees, and applicable sales tax charges. Additionally, the company must factor in the expenses relating to the storage of the incoming product and labor costs associated with receiving the products into inventory.

What Is Depreciation?

- Depreciation is an accounting process by which a company allocates an asset's cost throughout its useful life.

- The monetary value of an asset decreases over time due to use, wear and tear.

- In other words, it records how the value of an asset declines over time. Each time a company prepares its financial statements, it records a depreciation expense to allocate a portion of the cost of the buildings, machines or equipment it has purchased to the current fiscal year.

Relevance of Depreciation with respect to Industry

1. Companies use depreciation to report asset use to stakeholders. Stakeholders can review this information and know when to expect replacement assets purchased by a company. For example, a company with production equipment will often replace these items at some time during its operations, a replacement purchase may be coming up soon.

2. Tax benefits are also possible with depreciation. Although depreciation represents a non-cash expense on the income statement, it does reduce a company's net income. Lower net income will incur a smaller tax liability.

3. Depreciation helps companies accurately state incurred expense from using the asset and compare that to the revenue that asset brings in. Lack of depreciation can lead to over or under stating total asset expenses, which can lead to misleading financial information.