

Land

Labour

Capital

Entrepreneurship

Inputs.



outputs



Cars

Houses

Food

computers

UNIT - III

PRODUCTION, COST, MARKET STRUCTURES & PRICING

Session No. 27

PRODUCTION:

The processes and methods used to transform tangible inputs (raw materials, semi-finished goods, subassemblies) and intangible inputs (ideas, information, knowledge) into goods or services. Resources are used in this process to create an output that is suitable for use or has exchange value.

Factors of Production:

- (i) Land (ii) Labour (iii) Capital (iv) Entrepreneur.

Whatever is used in producing a commodity is called its inputs. For example, for producing wheat, a farmer uses inputs like soil, tractor, tools, seeds, manure, water and his own services.

All the inputs are classified into two groups' primary inputs and secondary inputs. Primary inputs render services only whereas secondary inputs get merged in the commodity for which they are used.

In the above example, soil, tractor, tools and farmer's services are primary inputs because they render services only whereas seeds, manure, water and insecticides are secondary inputs because they get merged in the commodity for which they are used. It is primary inputs which are called factors of production.

Primary inputs are also called factor inputs and secondary inputs are known as non-factor inputs. Alternatively, production is undertaken with the help of resources which can be categorized into natural resources (land), human resources (labour and entrepreneur) and manufactured resources (capital).

(i) Land:

It refers to all natural resources which are free gifts of nature. Land, therefore, includes all gifts of nature available to mankind—both on the surface and under the surface, e.g., soil, rivers, waters, forests, mountains, mines, deserts, seas, climate, rains, air, sun, etc.

(ii) Labour:

Human efforts done mentally or physically with the aim of earning income is known as labour. Thus, labour is a physical or mental effort of human being in the process of production. The compensation given to laborers in return for their productive work is called wages (or compensation of employees).

Land is a passive factor whereas labour is an active factor of production. Actually, it is labour which in cooperation with land makes production possible. Land and labour are also known as primary factors of production as their supplies are determined more or less outside the economic system itself.

(iii) Capital:

All man-made goods which are used for further production of wealth are included in capital. Thus, it is man-made material source of production. Alternatively, all man-made aids to production, which are not consumed/or their own sake, are termed as capital.

It is the produced means of production. Examples are—machines, tools, buildings, roads, bridges, raw material, trucks, factories, etc. An increase in the capital of an economy means an increase in the productive capacity of the economy. Logically and chronologically, capital is derived from land and labour and has therefore, been named as Stored-Up labour.

(iv) Entrepreneur:

An entrepreneur is a person who organizes the other factors and undertakes the risks and uncertainties involved in the production. He hires the other three factors, brings them together, organizes and coordinates them so as to earn maximum profit. For example, Mr. X who takes the risk of manufacturing television sets will be called an entrepreneur.

An entrepreneur acts as a boss and decides how the business shall run. He decides in what proportion factors should be combined. What and where he will produce and by what method. He is loosely identified with the owner, speculator, innovator or inventor and organizer of the business. Thus, entrepreneurship is a trait or quality owned by the entrepreneur.

Some economists are of the opinion that basically there are only two factors of production—land and labour. Land they say is appropriated from gifts of nature by human labour and entrepreneur is only a special variety of labour. Land and labour are, therefore, primary factors whereas capital and entrepreneur are secondary factors.

PRODUCTION FUNCTION

Introduction: The production function expresses a functional relationship between physical inputs and physical outputs of a firm at any particular time period. The output is thus a function of inputs. Mathematically production function can be written as

$$Q = f(A, B, C, D)$$

Where "Q" stands for the quantity of output and A, B, C, D are various input factors such as land, labour, capital and organization. Here output is the function of inputs. Hence output becomes the dependent variable and inputs are the independent variables.

The above function does not state by how much the output of "Q" changes as a consequence of change of variable inputs. In order to express the quantitative relationship between inputs and output, Production function has been expressed in a precise mathematical equation i.e.

$$Y = a + b(x)$$

Which shows that there is a constant relationship between applications of input (the only factor input 'X' in this case) and the amount of output (y) produced.

Importance:

1. When inputs are specified in physical units, production function helps to estimate the level of production.
2. It becomes is equates when different combinations of inputs yield the same level of output.
3. It indicates the manner in which the firm can substitute one input for another without altering the total output.
4. When price is taken into consideration, the production function helps to select the least combination of inputs for the desired output.
5. It considers two types' input-output relationships namely 'law of variable proportions' and 'law of returns to scale'. Law of variable proportions explains the pattern of output in the short-run as the units of variable inputs are increased to increase the output. On the other hand law of returns to scale explains the pattern of output in the long run as all the units of inputs are increased.
6. The production function explains the maximum quantity of output, which can be produced, from any chosen quantities of various inputs or the minimum quantities of various inputs that are required to produce a given quantity of output.

Production function can be fitted the particular firm or industry or for the economy as whole. Production function will change with an improvement in technology.

Assumptions:

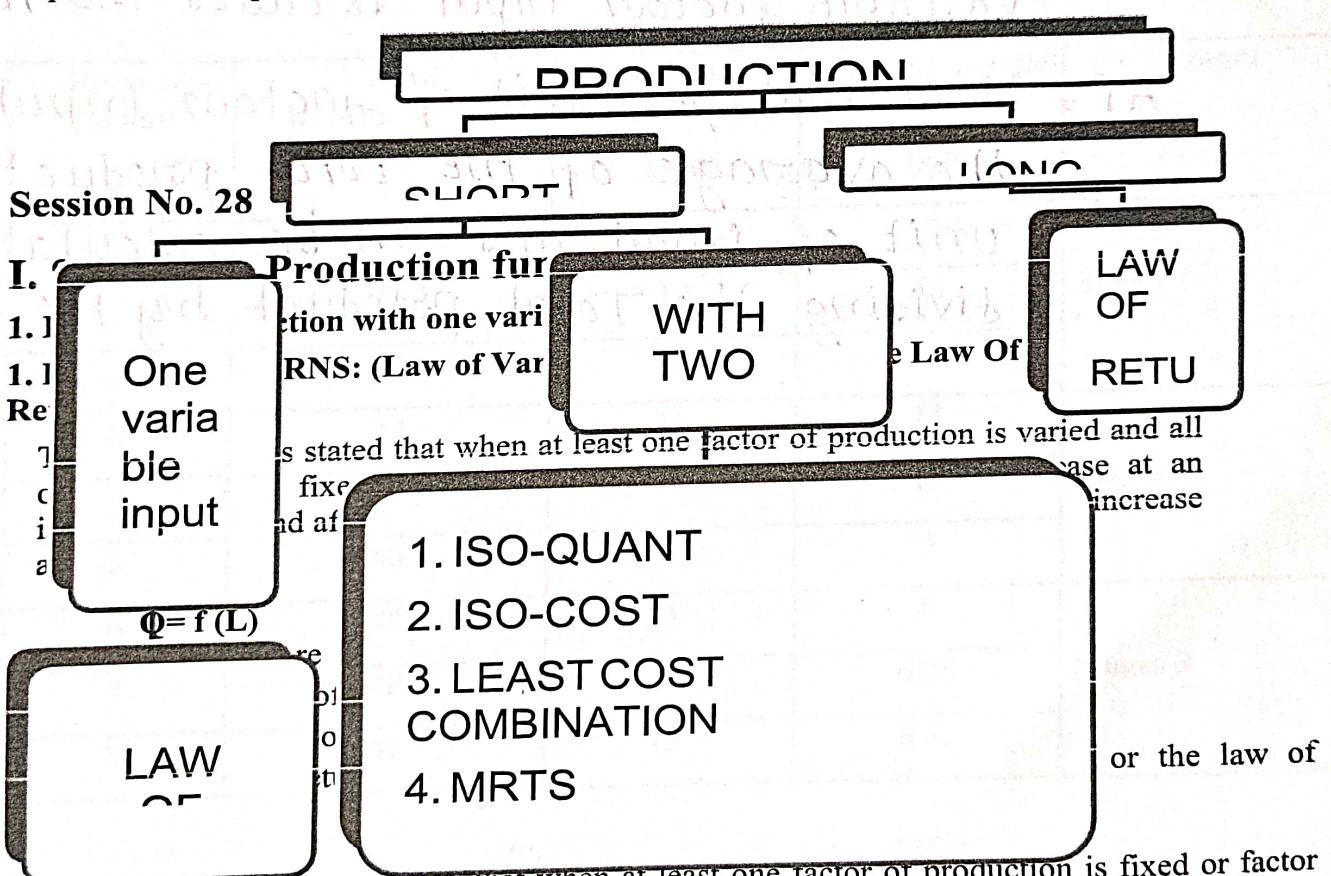
Production function has the following assumptions.

1. The production function is related to a particular period of time.
2. There is no change in technology.
3. The producer is using the best techniques available.
4. The factors of production are divisible.
5. Production function can be fitted to a short run or to long run.

Samuelson define the production function as "the technical relationship which reveals the maximum amount of output capable of being produced by each and every set of inputs".

A manufacturer has to make a choice of the production function by considering his technical knowledge, the process of various factors of production and his efficiency level to manage. He should not only select the factors of production but also should work out the different permutations and combinations which will mean lower cost of inputs for a given level of production.

In case of an agricultural product, increasing the other factors of production can increase the production, but beyond a point, increase output can be had only with increased use of agricultural land, investment in land forms a significant portion of the total cost of production for output, whereas, in the case of the software industry, other factor such as technology, capital management and others become significant. With change in industry and the requirements the production function also needs to be modified to suit to the situation.



The laws of returns states that when at least one factor of production is fixed or factor input is fixed and when all other factors are varied, the total output in the initial stages will increase at an increasing rate, and after reaching certain level or output the total output will increase at declining rate. If variable factor inputs are added further to the fixed factor input, the total output may decline. This law is of universal nature and it proved to be true in agriculture and industry also. The law of returns is also called the law of variable proportions or the law of diminishing returns.

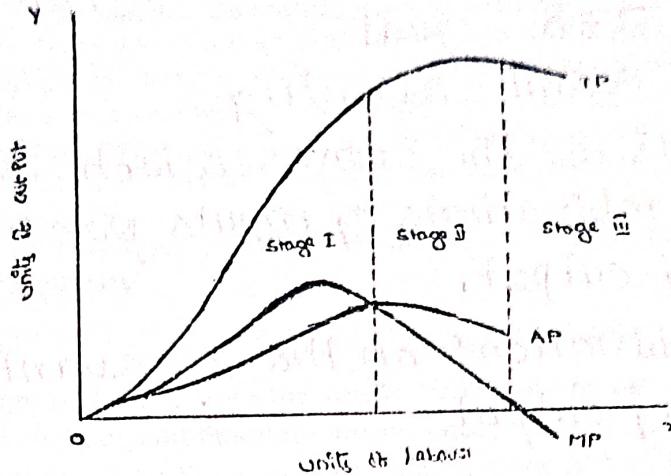
Definition According to G. Stigler

"If equal increments of one input are added, the inputs of other production services being held constant, beyond a certain point the resulting increments of product will decrease i.e. the marginal product will diminish".

According to F. Benham

"As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish".

Units of labour	Total production(TP)	Marginal product (MP)	Average product (AP)	Stages
0	0	0	0	Stages 1
1	10	10	10	
2	22	12	11	
3	33	11	11	Stages 2
4	40	7	10	
5	45	5	9	
6	48	3	8	
7	48	0	6.85	Stages 3
8	45	-3	5.62	



From the above graph the law of variable proportions operates in three stages.

In the first stage, total product increases at an increasing rate. The marginal product in this stage increases increasing rate resulting in a greater increase in total product. The average product also increases. This stage continues up to the point where average product is equal to marginal product. The law of increasing returns is in operation at this stage. The law of diminishing returns starts operating from the second stage onwards.

At the second stage total product increases only at a diminishing rate. The average product also declines. The second stage comes to an end where total product becomes maximum and marginal product becomes zero. The marginal product becomes negative.

In the third stage. So the total product also declines. The average product continues to decline.

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2. Production Function with Two Variable Inputs:

Production process that requires two inputs, capital (C) and labour (L) to produce a given output (Q). There could be more than two inputs in a real life situation, but for a simple analysis, we restrict the number of inputs to two only. In other words, the production function based on two inputs can be expressed as

$$Q = f(C, L)$$

Where C = Capital, L = Labour,

Normally, both capital and labour are required to produce a product. To some extent, these two inputs can be substituted for each other. Hence the producer may choose any combination of labour and capital that gives him the required number of units of output, for any one combination of labour and capital out of several such combinations. The alternative combinations of labour and capital yielding a given level of output are such that if the use of one factor input is increased, that of another will decrease and vice versa. However, the units of an input foregone to get one unit of the other input changes, depends upon the degree of substitutability between the two input factors, based on the techniques or technology used, the degree of substitutability may vary.

A. ISO - QUANTS

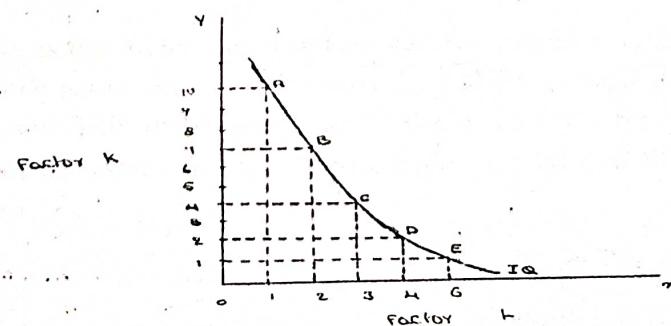
The term Isoquants is derived from the words „iso“ and „quant“ – „Iso“ means equal and „quent“ implies quantity. Isoquant therefore, means equal quantity. Isoquants are also called isoproduct curves, an isoquant curve shows various combinations of two input factors such as capital and labour, which yield the same level of output.

As an isoquant curve represents all such combinations which yield equal quantity of output, any or every combination is a good combination for the manufacturer. Since he prefers all these combinations equally, an isoquant curve is also called product indifferent curve.

An isoquant may be explained with the help of an arithmetical example

Combinations	Labour (units)	Capital (Units)	Output (quintals)
A	1	10	50
B	2	7	50
C	3	4	50
D	4	4	50
E	5	1	50

Combination „A“ represent 1 unit of labour and 10 units of capital and produces „50“ quintals of a product all other combinations in the table are assumed to yield the same given output of a product say „50“ quintals by employing any one of the alternative combinations of the two factors labour and capital. If we plot all these combinations on a paper and join them, we will get continuous and smooth curve called Iso-product curve as shown below.



Labour is on the X-axis and capital is on the Y-axis. IQ is the ISO-Product curve which shows all the alternative combinations A, B, C, D, E which can produce 50 quintals of a product

Features of isoquant

- 1. Downward sloping:** isoquants are downward sloping curves because, if one input increases, the other one reduces. There is no question of increase in both the inputs to yield a given output. A degree of substitution is assumed between the factors of production. In other words, an isoquant cannot be increasing, as increase in both the inputs does not yield same level of output. If it is constant, it means that the output remains constant through the use of one of the factor is increasing, which is not true, isoquant slope from left to right.
- 2. Convex to origin:** isoquants are convex to the origin. It is because the input factors are not perfect substitutes. One input factor can be substituted by other input factor in a diminishing marginal rate. If the input factors were perfect substitutes, the isoquant would be a falling straight line. When the inputs are used in fixed proportion, and substitution of one input for the other cannot take place, the isoquant will be L shaped.
- 3. Do not intersect:** two isoquants do not intersect with each other. It is because, each of these denote a particular level of output. If the manufacturer wants to operate at a higher level of output, he has to switch over to another isoquant with a higher level of output and vice versa.
- 4. Do not axes:** the isoquant touches neither X-axis nor Y-axis, as both inputs are required to produce a given product.

B. ISO COST

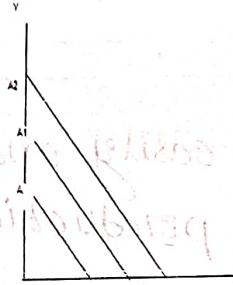
Isocost refers to that cost curve that represents the combination of inputs that will cost the producer the same amount of money. In other words, each isocost denotes a particular level of total cost for a given level of production. If the level of production changes, the total cost changes and thus the isocost curve moves upwards, and vice versa.

Isocost curve is the locus traced out by various combinations of L and K, each of which costs the producer the same amount of money (C). Differentiating equation with respect to L, we have $dK/dL = -w/r$. This gives the slope of the producer's budget line (isocost curve). Iso cost line shows various combinations of labour and capital that the firm can buy for a given

factor prices. The slope of isocost line = PL/Pk . In this equation, PL is the price of labour and Pk is the price of capital. The slope of isocost line indicates the ratio of the factor prices. A set of isocost lines can be drawn for different levels of factor prices, or different sums of money. The isocost line will shift to the right when money spent on factors increases or firm could buy more as the factor prices are given.

With the change in the factor prices the slope of iso cost line will change. If the price of labour falls the firm could buy more of labour and the line will shift away from the origin.

The slope depends on the prices of factors of production and the amount of money which the firm spends on the factors. When the amount of money spent by the firm changes, the isocost line may shift but its slope remains the same. A change in factor price makes changes in the slope of isocost lines as shown in the figure.



C. Least Cost Combination of Inputs

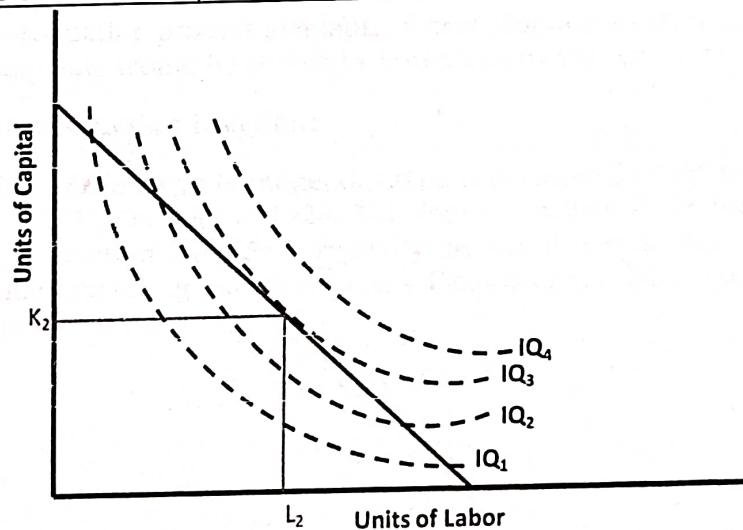
The manufacturer has to produce at lower costs to attain higher profits. The isocost and isoquants can be used to determine the input usage that minimizes the cost of production. Where the slope of isoquant is equal to that of isocost, there lies the lowest point of cost of production. This can be observed by superimposing the isocost on isoproduct curves. It is evident that the producer can, with a total outlay.

The firm can achieve maximum profits by choosing that combination of factors which will cost it the least. The choice is based on the prices of factors of production at a particular time. The firm can maximize its profits either by maximizing the level of output for a given cost or by minimizing the cost of producing a given output. In both cases the factors will have to be employed in optimal combination at which the cost of production will be minimum. The least cost factor combination can be determined by imposing the isoquant map on isocost line. The

point of tangency between the isocost and an isoquant is an important but not a necessary condition for producer's equilibrium. The essential condition is that the slope of the isocost line must equal the slope of the isoquant. Thus at a point of equilibrium marginal physical productivities of the two factors must be equal the ratio of their prices. The marginal physical product per rupee of one factor must be equal to that of the other factor. And isoquant must be convex to the origin. The marginal rate of technical substitution of labour for capital must be diminishing at the point of equilibrium.

The manufacturer has to produce at lower cost to attain higher profits. The isoquants and isocost can be used to determine the input usage that minimize the cost of production.

LEAST COST COMBINATION (LCC)	MAXIMUM OUTPUT	MINIMUM COST
OL1 & OC1	20000 UNITS	100000
OL2 & OC2	30000 UNITS	200000
OL3 & OC3	40000 UNITS	300000



D. Marginal Rate of Technical Substitution

The marginal rate of technical substitution (MRTS) refers to the rate at which one input factor is substituted with the other to attain a given level of output. In other words, the lesser units of one input must be compensated by increasing amounts of another input to produce the same level of output.

Isoquants are typically convex to the origin reflecting the fact that the two factors are substitutable for each other at varying rates. This rate of substitutability is called the "marginal rate of technical substitution" (MRTS) or occasionally the "marginal rate of substitution in production". It measures the reduction in one input per unit increase in the other input that is

just sufficient to maintain a constant level of production. For example, the marginal rate of substitution of labour for capital gives the amount of capital that can be replaced by one unit of labour while keeping output unchanged.

To move from point A to point B in the diagram, the amount of capital is reduced from K_a to K_b while the amount of labour is increased only from L_a to L_b . To move from point C to point D, the amount of capital is reduced from K_c to K_d while the amount of labour is increased from L_c to L_d . The marginal rate of technical substitution of labour for capital is equivalent to the absolute slope of the isoquant at that point (change in capital divided by change in labour). It is equal to 0 where the isoquant becomes horizontal, and equal to infinity where it becomes vertical.

The opposite is true when going in the other direction (from D to C to B to A). In this case we are looking at the marginal rate of technical substitution capital for labour (which is the reciprocal of the marginal rate of technical substitution labour for capital).

It can also be shown that the marginal rate of substitution labour for capital, is equal to the marginal physical product of labour divided by the marginal physical product of capital.

In the unusual case of two inputs that are perfect substitutes for each other in production, the isoquant would be linear (linear in the sense of a function $y = a - bx$). If, on the other hand, there is only one production process available, factor proportions would be fixed, and these zero-substitutability isoquants would be shown as horizontal or vertical lines.

E. Cobb-Douglas production function:

Production function of the linear homogenous type is invented by Junt wicksell and first tested by C. W. Cobb and P. H. Dougles in 1928. This famous statistical production function is known as Cobb-Douglas production function. Originally the function is applied on the empirical study of the American manufacturing industry. Cobb – Douglas production function takes the following mathematical form.

$$Y = (AK^x L^{1-x})$$

Where Y=output

K=Capital

L=Labour

A, α =positive constant

Assumptions:

It has the following assumptions

1. The function assumes that output is the function of two factors viz. capital and labour.
2. It is a linear homogenous production function of the first degree
3. The function assumes that the logarithm of the total output of the economy is a linear function of the logarithms of the labour force and capital stock.

4. There are constant returns to scale
5. All inputs are homogenous
6. There is perfect competition
7. There is no change in technology

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II. Long Run Production function:

Law of Returns to Scale

In the long-term all factors can be changed as made variable. When we study the changes in output when all factors or inputs are changed, we study returns to scale. An increase in the scale means that all inputs or factors are increased in the same proportion.

When a firm expands, its scale increases all its inputs proportionally, then technically there are three possibilities. (i) The total output may increase proportionately (ii) The total output may increase more than proportionately and (iii) The total output may increase less than proportionately. If increase in the total output is proportional to the increase in input, it means constant returns to scale. If increase in the output is greater than the proportional increase in the inputs, it means increasing return to scale. If increase in the output is less than proportional increase in the inputs, it means diminishing returns to scale.

Assumptions

- All factor or inputs are variable.
- No change in production technique.

According to the law, there are three stages;

1. law of increasing returns
2. law of decreasing returns
3. law of constant returns

1. Law of increasing returns

If the percentage increase in output is greater than percentage increase in input then we will have law of increasing returns.

Here, %change in output/ % change in input > 1

2. Law of constant returns

If the percentage increase in output is equal to percentage increase in input then we will have law of constant returns.

Here, %change in output/ % change in input = 1

3. Law of decreasing returns

If the percentage increase in output is less than percentage increase in input then we will have law of decreasing returns.

Here, %change in output/ % change in input < 1

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Types of Production Functions:

1. Cobb Douglas production function
2. Leontief Production Function
3. CES Production Function

There are different types of production functions that can be classified according to the degree of substitution of one input by the other.

1. Cobb Douglas production function

The Cobb Douglas production function, given by American economists, Charles W. Cobb and Paul. H Douglas, studies the relation between the input and the output.

The cobb douglas production function is that type of production function wherein an input can be substituted by others to a limited extent.

For example, capital and labour can be used as a substitute of each other, however to a limited extent only. Cobb Douglas production function can be expressed as follows:

$$Q = A K^a L^b$$

Where, A = positive constant

a and b = positive fractions

$$b = 1 - a$$

Cobb Douglas production function Properties

The main attributes of the Cobb Douglas production function are discussed as follows:

- It enables the conversion of the algebraic form into log linear form, represented as follows: $\log Q = \log A + a \log K + b \log L$ This production function has been estimated with the help of linear regression analysis.
- It acts as a homogeneous production function, whose degree can be calculated by the value obtained after adding values of a and b . If the resultant value of $a+b$ is 1, it implies that the degree of homogeneity is 1 and indicates the constant returns to scale.
- It makes use of parameters a and b , which signifies the elasticity coefficients of output for inputs, labour and capital, respectively. Output elasticity coefficient is the change in output that occurs due to adjustment in capital while keeping labour at constant.
- It depicts the non-existence of production at zero cost.

2. Leontief Production Function

Leontief production function, evolved by W. Wassily Leontif, uses fixed proportion of inputs having no substitutability between them.

It implies that if the input-output ratio is independent of the scale of production, there is existence of Leontief production function. It assumes strict complementarity of factors of production. Leontief production function is also called as fixed proportion production function.

This production function can be expressed as follows:

$$q = \min(z_1/a, z_2/b)$$

where, q = quantity of output produced

z_1 = utilised quantity of input 1

z_2 = utilised quantity of input 2

a and b = constants

Minimum implies that the total output depends upon the smaller of the two ratios.

3. CES Production Function

CES stands for constant elasticity substitution. CES production function displays a constant change produced in the output due to change in input of production.

It is expressed as:

$$Q = A [aK^{-\beta} + (1-a)L^{-\beta}]^{-1/\beta}$$

CES has the homogeneity degree of 1 that implies that output would be increased with the increase in inputs. For example, labour and capital has increased by constant factor m .

Properties of CES Production Function

The properties of CES function are as follows:

- The value of elasticity of substitution depends upon the value of a .
- The marginal products are positive and slope downwards.

Merits of CES Production Function

The merits of CES production are as follows:

- Covers a number of parameters, such as efficiency and substitutability
- Easy to estimate
- Free from unrealistic assumptions, such as fixed technology, etc.

Demerits of CES function

The demerits of CES production system are as follows:

- Fails to fit for manufacturing industries
- Cannot be generalized in case of n factors of production
- Fails to give correct economic implications

INTERNAL AND EXTERNAL ECONOMIES OF SCALE

Internal economies refer to the economies introduction costs which accrue to the firm alone when it expands its output. The internal economies occur as a result of increase in the scale of production.

1. **Managerial Economics:** as the firm expands, the firm needs qualified managerial personnel to handle each of its functions marketing, finance, production, human resources and others in a professional way. Functional specialization ensure minimum wastage and lowers the cost of production in the long -run.
2. **Commercial Economics:** the transaction of buying and selling raw material and other operating supplies such as spares and so on will be rapid and the volume of each transaction also grows as the firm grows, there could be cheaper savings in the procurement, transportation and storage cost, this will lead to lower costs and increased profits.
3. **Financial Economics:** The large firm is able to secure the necessary finances either for block capital purposes or for working capital needs more easily and cheaply. It can barrow from the public, banks and other financial institutions at relatively cheaper rates. It is in this way that a large firm reaps financial economies.
4. **Technical Economies:** Technical economies arise to a firm from the use of better machines and superior techniques of production. As a result, production increases and per unit cost of production falls. A large firm, which employs costly and superior plant and equipment, enjoys a technical superiority over a small firm. Another technical

economy lies in the mechanical advantage of using large machines. The cost of operating large machines is less than that of operating small machine. Moreover a larger firm is able to reduce its per unit cost of production by linking the various processes of production. Technical economies may also be associated when the large firm is able to utilize all its waste materials for the development of by-products industry. Scope for specialization is also available in a large firm. This increases the productive capacity of the firm and reduces the unit cost of production.

5. **Marketing Economies:** The large firm reaps marketing or commercial economies in buying its requirements and in selling its final products. The large firm generally has a separate marketing department. It can buy and sell on behalf of the firm, when the market trends are more favorable. In the matter of buying they could enjoy advantages like preferential treatment, transport concessions, cheap credit, prompt delivery and fine relation with dealers. Similarly it sells its products more effectively for a higher margin of profit.
6. **Risk Bearing Economies:** The large firm produces many commodities and serves wider areas. It is, therefore, able to absorb any shock for its existence. For example, during business depression, the prices fall for every firm. There is also a possibility for market fluctuations in a particular product of the firm. Under such circumstances the risk-bearing economies or survival economies help the bigger firm to survive business crisis.
7. **Economics of Larger Dimension:** Large-scale production is required to take advantage of bigger size plant and equipment. For example, the cost of a 1,00,000 units capacity plant will not be double that of 50,000 units capacity plant. Likewise the cost of a 10,000 ton oil tanker will not be double that of a 5000 ton oil tanker. Engineers go by what is called two by three rule wherein when the volume is increased by 100%, the material required will increase only by two-thirds. Technical economies are available only from large size, improved methods of production processes and when the products are standardized.
8. **Economics Of Research And Development:** Large organizations such as Dr. Reddy's labs, Hindustan Lever spend heavily on research and development and bring out several innovative products. Only such firms with a strong research and development base can cope with competition globally.

EXTERNAL ECONOMICS:

External economies refer to all the firms in the industry, because of growth of the industry as a whole or because of growth of ancillary industries, external economies benefit all the firms in the industry as the industry expands. This will lead to lowering the cost of production and thereby increasing the profitability. The external economies can be grouped under three types:

A). Economics of Concentration: When an industry is concentrated in a particular area, all the member firms reap some common economies like skilled labour, improved means of transport and communications, banking and financial services, supply of power and benefits from subsidiaries. All these facilities tend to lower the unit cost of production of all the firms in the industry.

B) Economics of Research and Development: all the firms can pool resources to finance research and development activities and thus share the benefits of research. There could be a common facility to share journals, newspapers and other valuable reference material of common interest.

C) Economics of Welfare: there could be common facilities such as canteen, industrial housing, community halls, schools and colleges, employment bureau, hospitals and so on, which can be used in common by the employees in the whole industry.

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COST:

The institute of cost and management accountants (ICMA) has defined cost as "the amount expenditure, actual or notional, incurred on or attributable to a specified thing or activity". It is the amount of resources sacrificed to achieve a specific objective. A cost must be with reference to the purpose for which it is used and the conditions under which it is computed. To take decision, managers wish to know the cost of something.

Cost refers to the expenditure incurred to produce a particular product or services. All costs involve a sacrifice of some kind or other to acquire some benefit. For example, if I want to eat food, I should be prepared to sacrifice money.

Cost refers to the amount of expenditure incurred in acquiring something. In business firm, it refers to the expenditure incurred to produce an output or provide service. Thus the cost incurred in connection with raw material, labour, other heads constitute the overall cost of production.

COST CONCEPTS:

A managerial economist must have a clear understanding of the different cost concepts for clear business thinking and proper application. The several alternative bases of classifying cost and the relevance of each for different kinds of problems are to be studied. The various relevant concepts of cost are:

In simple terms, it is the earning from the second alternative. It represents the maximum possible alternative income that would have been earned if the resources were put to alternative use.

Opportunity cost can be distinguished from outlay costs based on the nature of sacrifice. Outlay costs are those costs that involve cash outflow at some time and hence they are recorded in the book of account. Opportunity cost refers to earnings/profits that are foregone from alternative ventures by using given facilities for a particular purpose.

2. Fixed Cost Vs Variable Cost

Fixed cost is that cost which remains constant for a certain level of output. It is not affected by the changes in the volume of production. But fixed cost per unit decrease, when the production is increased. Fixed cost includes salaries, Rent, Administrative expenses, depreciations etc.

Variable is that which varies directly with the variation in output. An increase in total output results in an increase in total variable costs and decrease in total output results in a proportionate decline in the total variable costs. The variable cost per unit will be constant. Ex: Raw materials, labour, direct expenses, etc.

3. Explicit and Implicit Costs:

Explicit costs are those expenses that involve cash payments. These are the actual or business costs that appear in the books of accounts. These costs include payment of wages and salaries, payment for raw-materials, interest on borrowed capital funds, rent on hired land, Taxes paid etc.

Implicit costs are the costs of the factor units that are owned by the employer himself. These costs are not actually incurred but would have been incurred in the absence of employment of self-owned factors. The two normal implicit costs are depreciation, interest on capital etc. A decision maker must consider implicit costs too to find out appropriate profitability of alternatives.

4. Short – Run and Long – Run Costs:

Short-run is a period during which the physical capacity of the firm remains fixed. Any increase in output during this period is possible only by using the existing physical capacity more extensively. So short run cost is that which varies with output when the plant and capital equipment are constant.

Long run costs are those, which vary with output when all inputs are variable including plant and capital equipment. Long-run cost analysis helps to take investment decisions.

5. Out of Pocket and Books Costs:

Out of pocket costs also known as explicit costs are those costs that involve current cash payment. Book costs also called implicit costs do not require current cash payments. Depreciation, unpaid interest, salary of the owner is examples of book costs.

But the book costs are taken into account in determining the level dividend payable during a period. Both book costs and out-of-pocket costs are considered for all decisions. Book cost is the cost of self-owned factors of production.

6. Fixed and variable costs:

Fixed cost is that cost which remains constant for a certain level of output. It is not affected by the changes in the volume of production. But fixed cost per unit decrease, when the production is increased. Fixed cost includes salaries, Rent, Administrative expenses, depreciations etc.

Variable is that which varies directly with the variation in output. An increase in total output results in an increase in total variable costs and decrease in total output results in a proportionate decline in the total variable costs. The variable cost per unit will be constant. Ex: Raw materials, labour, direct expenses, etc.

7. Semi-Fixed or Semi-Variable Cost:

It refers to such cost that are fixed to some extent beyond which they are variable.
Example: electricity charges.

8. Marginal Cost:

It refers to the additional cost incurred for producing an additional unit.

9. Controllable and Uncontrollable Costs:

Controllable costs are ones, which can be regulated by the executive who is in charge of it. The concept of controllability of cost varies with levels of management. Direct expenses like material, labour etc. are controllable costs.

Some costs are not directly identifiable with a process of product. They are apportioned to various processes or products in some proportion. This cost varies with the variation in the basis of allocation and is independent of the actions of the executive of that department. These apportioned costs are called uncontrollable costs.

10. Opportunity Costs and Outlay Costs:

Opportunity cost implies the earnings foregone on the next best alternative, has the present option is undertaken. This cost is often measured by assessing the alternative, which has to be sacrificed if the particular line is followed.

Outlay cost also known as actual costs, obsolete costs are those expenses which are actually incurred by the firm. These are the payments made for labour, material, plant, building,

machinery traveling, transporting etc., These are all those expense item appearing in the books of account, hence based on accounting cost concept.

11. Historical and Replacement costs:

Historical cost is the original cost of an asset. Historical cost valuation shows the cost of an asset as the original price paid for the asset acquired in the past. Historical valuation is the basis for financial accounts.

A replacement cost is the price that would have to be paid currently to replace the same asset. During periods of substantial change in the price level, historical valuation gives a poor projection of the future cost intended for managerial decision. A replacement cost is a relevant cost concept when financial statements have to be adjusted for inflation.

12. Urgent Vs. Postponable Cost:

Urgent cost are raw material, wages and soon, necessary to sustain the production activity. There are certain cost such as white washing the building which can be postponed.

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COST-OUTPUT RELATIONSHIP:

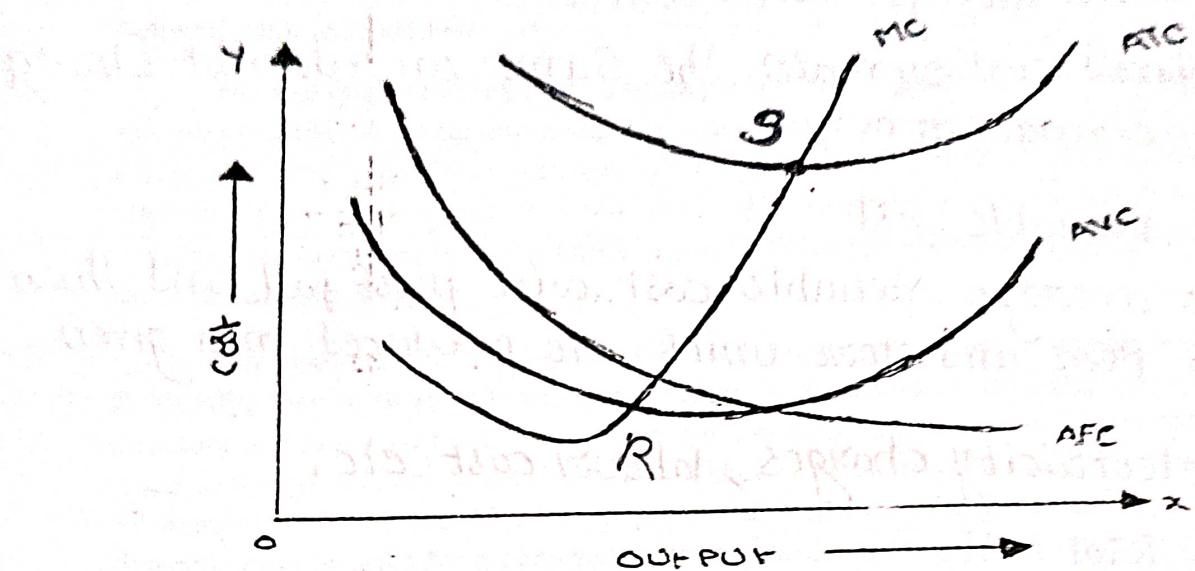
The cost-output relationship plays an important role in determining the optimum level of production. Knowledge of the cost-output relation helps the manager in cost control, profit prediction, pricing, promotion etc.

A proper understanding of the nature and behavior of costs is a must for regulation and control of cost of production. The cost of production depends on money forces and an understanding of the functional relationship of cost to various forces will help us to take various decisions. Output is an important factor, which influences the cost.

(a) Cost-Output Relation in the short-run:

1. The total fixed cost remain fixed irrespective of increase or decrease in productivity activity.
2. Average fixed cost per unit declines as the volume of production increases. The relationship between the fixed cost per unit and volume of production is inverse.
3. The total variable cost increases proportionately with the production. The rate of increase is not constant.
4. The total cost increases with the volume of production.

5. Marginal cost is the change in total cost resulting from a unit change in the output.

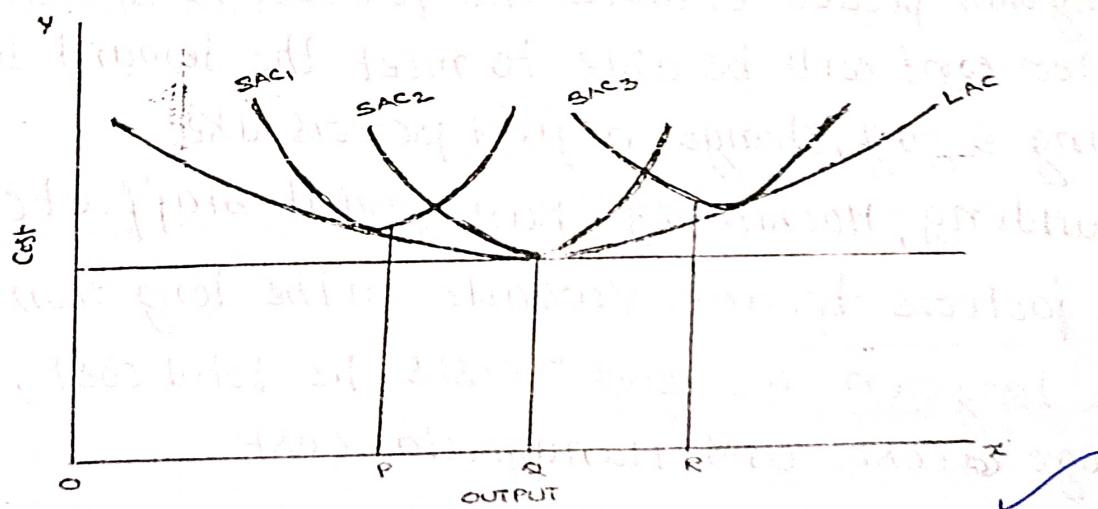


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b. Cost-output relationship in the long-run:

Long-run average cost curve (LAC) is flat U-shaped curve enveloping a series of short-run average cost curve (SAC). It is tangential to all the SAC.

The point of tangency represents the minimum cost in the long-run.



Session No. 35

Introduction to markets:

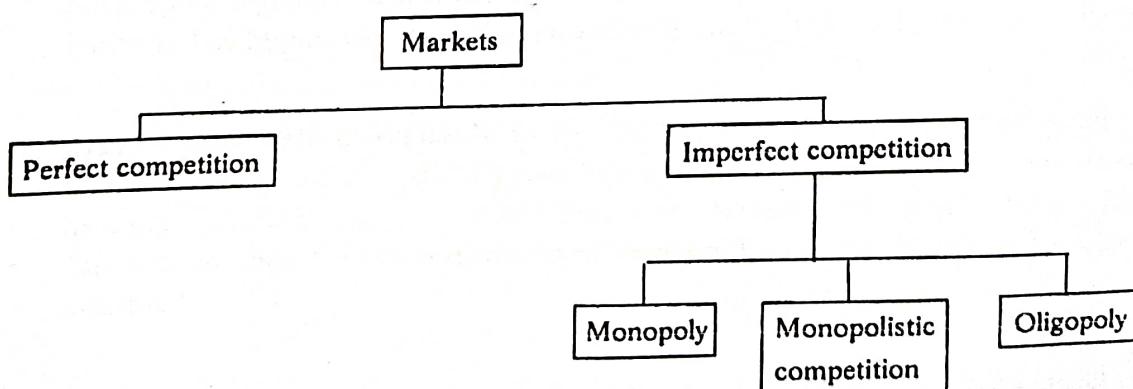
Market is a place where buyer and seller meet, goods and services are offered for the sale and transfer of ownership occurs. A market may be also defined as the demand made by a certain group of potential buyers for a good or service. The former one is a narrow concept and later one, a broader concept. Economists describe a market as a collection of buyers and sellers, who transact over a particular product or product class (the housing market, the clothing market, the grain market etc.).

For business purpose we define a market as people or organizations with wants (needs) to satisfy, money to spend, and the willingness to spend it. Broadly, market represents the structure and nature of buyers and sellers for a commodity/service and the process by which the price of the commodity or service is established. In this sense, we are referring to the structure of competition and the process of price determination for a commodity or service. The determination of price for a commodity or service depends upon the structure of the market for that commodity or service (i.e., competitive structure of the market). Hence the understanding on the market structure and the nature of competition are a pre-requisite in price determination.

Market Structures

Market structure describes the competitive environment in the market for any good or service. A market consists of all firms and individuals who are willing and able to buy or sell a particular product. This includes firms and individuals currently engaged in buying and selling a particular product, as well as potential entrants.

The determination of price is affected by the competitive structure of the market. This is because the firm operates in a market and not in isolation. In marking decisions concerning economic variables it is affected, as are all institutions in society by its environment.



Perfect Competition:

Perfect competition refers to a market structure where competition among the sellers and buyers prevails in its most perfect form. In a perfectly competitive market, a single market price prevails for the commodity, which is determined by the forces of total demand and total supply in the market.

A market structure in which all firms in an industry are price takers and in which there is freedom of entry into and exit from the industry is called perfect competition. The market with perfect competition conditions is known as perfect market.

Features of perfectly competition

1. **A large number of buyers and sellers:** The number of buyers and sellers is large and the share of each one of them in the market is so small that none has any influence on the market price.

There should be significantly large number of buyers and sellers in the market. The number should be so large that it should not make any difference in terms of price of quantity supplied even if one enters the market or one leaves the market.

2. **Homogenous products or services:** the products and services of each seller should be homogeneous. They cannot be differentiated from that of one another. It makes no difference to the buyer whether he buys from firm X or firm Z. in other words, the buyer does not have any particular preference to buy the goods from a particular trader or supplier. The price is one and the same in every firm. There are no concessions or discounts.

3. **Freedom to enter or exit the market:** there should not be restrictions on the part of the buyers and sellers to enter the market or leave the market. There should not be any barriers. The buyers can enter the market or leave the market whenever they want.

4. **Prefect information available to the buyers and sellers:** each buyer and seller has total knowledge of the prices prevailing in the market at every given point of time, quantity supplied, costs, demand, nature of product, and other relevant information. There is no need for any advertisement expenditure as the buyers and sellers are fully informed.

5. **Perfect mobility of factors of production:** there should not be any restrictions on the utilization of factors of production such as land, labour, capital and so on. In words, the

firm or buyer should have free access to the factors of production. Whenever capital or labor is required, it should instantly be made available.

6. **Each firm is a price taker:** an individual firm can alter its rate of production or sales without significantly affecting the market price of the product, a firm in a perfect market cannot influence the market through its own individual actions. It has no alternative other than selling its products at the price prevailing in the market. It cannot sell as much as it wants at its own set price.

Price and Output Determination under Perfect Competition:

Perfect competition refers to a market situation where there are a large number of buyers and sellers dealing in homogenous products.

In perfect competition, sellers and buyers are fully aware about the current market price of a product. Therefore, none of them sell or buy at a higher rate. As a result, the same price prevails in the market under perfect competition.

Under perfect competition, the buyers and sellers cannot influence the market price by increasing or decreasing their purchases or output, respectively. The market price of products in perfect competition is determined by the industry. This implies that in perfect competition, the market price of products is determined by taking into account two market forces, namely market demand and market supply.

In the words of Marshall, "Both the elements of demand and supply are required for the determination of price of a commodity in the same manner as both the blades of scissors are required to cut a cloth." As discussed in the previous chapters, market demand is defined as a sum of the quantity demanded by each individual organization in the industry.

Equilibrium under Perfect Competition:

As discussed earlier, in perfect competition, the price of a product is determined at a point at which the demand and supply curve intersect each other. This point is known as equilibrium point. At this point, the quantity demanded and supplied is called equilibrium quantity.

Figure-3 shows the equilibrium under perfect competition:

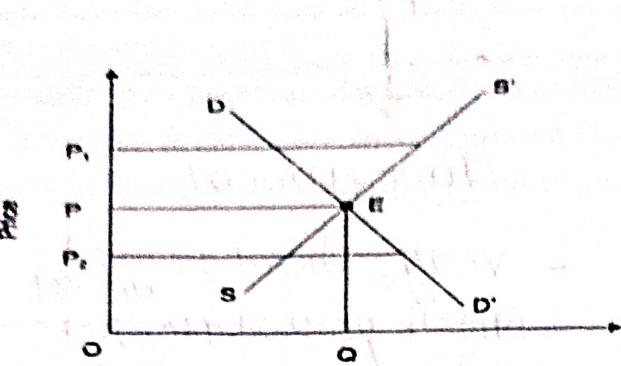


Figure-3: Price and Output Determination under Perfect Competition

In Figure-3, it can be seen that at price OP_1 , supply is more than the demand. Therefore, prices will fall down to OP . Similarly, at price OP_2 , demand is more than the supply. Similarly, in such a case, the prices will rise to OP . Thus, E is the equilibrium at which equilibrium price is OP and equilibrium quantity is OQ .

Equilibrium of the Firm and Industry under Perfect Competition:

The below mentioned article provides a close view on the Equilibrium of the Firm and Industry under Perfect Competition. After reading this article you will learn about: 1. Meaning of Firm and Industry 2. Conditions of Equilibrium of the Firm and Industry 3. Short-Run Equilibrium of the Firm and Industry 4. Long-Run Equilibrium of the Firm and Industry.

Meaning of Firm and Industry:

It is essential to know the meaning of firm and industry before analysing the two. Firm is an organisation which produces and supplies goods that are demanded by the people with the goal of maximising its profits.

According to R.L.Miller, "Firm is an organisation that buys and hires resources and sells goods and services." To Lipsey, "Firm is the unit that employs factors of production to produce commodities that it sells to other firms, to households, or to the government."

Industry is a group of firms producing homogeneous products in a market. According to Lipsey, "Industry is a group of firms that sells a well-defined product or closely related set of products." For example, Raymond, Maffatlal, Arvind, etc., are cloth manufacturing firms, whereas a group of such firms is called the textile industry.

Conditions of Equilibrium of the Firm and Industry:

A firm is in equilibrium when it has no tendency to change its level of output. It needs neither expansion nor contraction. It wants to earn maximum profits in by equating its marginal cost with its marginal revenue i.e. $MC = MR$.

Diagrammatically, the conditions of equilibrium of the firm are:

(1) The MC curve must equal the MR curve. This is the first order and necessary condition. But this is not a sufficient condition which may be fulfilled yet the firm may not be in equilibrium.

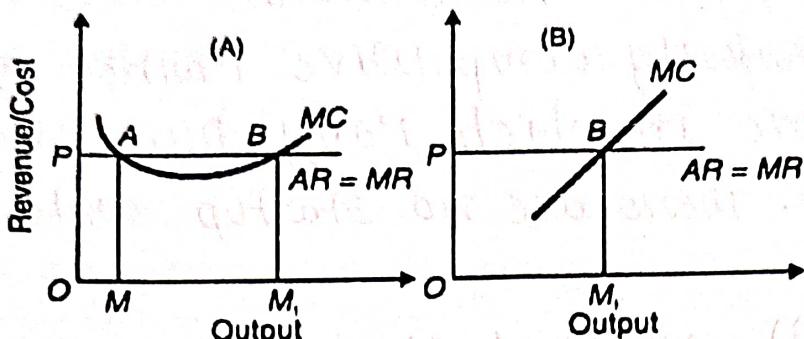


Fig. 1

(2) The MC curve must cut the MR curve from below and after the point of equilibrium it must be above the MR. This is the second order condition.' Under conditions of perfect competition, the MR curve of a firm coincides with the AR curve. The MR curve is horizontal to the X- axis. Therefore, the firm is in equilibrium when $MC=MR=AR$ (Price).

In Figure 1(A), the MC curve cuts the MR curve first at point A. It satisfies the condition of $MC = MR$, but it is not a point of maximum profits because after point A, the MC curve is below the MR curve. It does not pay the firm to produce the minimum output OM when it can earn larger profits by producing beyond OM .

Point B is of maximum profits where both the conditions are satisfied. Between points A and B, it pays the firm to expand its output because it's $MR > MC$. It will, however, stop further production when it reaches the OM_1 level of output where the firm satisfies both the conditions of equilibrium.

If it has any plans to produce more than OM_1 it will be incurring losses, for its marginal cost exceeds its marginal revenue beyond the equilibrium point B. The same conclusions hold good in the case of a straight line MC curve as shown in Figure 1. (B)

An industry is in equilibrium: firstly when there is no tendency for the firms either to leave or enter the industry, and secondly, when each firm is also in equilibrium. The first condition implies that the average cost curves coincide with the average revenue curves of all the firms in the industry. They are earning only normal profits, which are supposed to be included in the average cost curves of the firms.

The second condition implies the equality of MC and MR. Under a perfectly competitive industry these two conditions must be satisfied at the point of equilibrium, i.e.

$$MC = MR \dots (1)$$

$$AC = AR \dots (2)$$

$$AR = MR$$

$$MC = AC = AR$$

Session No. 36

Monopoly

The word monopoly is made up of two syllables, Mono and poly. Mono means single while poly implies selling. Thus monopoly is a form of market organization in which there is only one seller of the commodity. There are no close substitutes for the commodity sold by the seller. Pure monopoly is a market situation in which a single firm sells a product for which there is no good substitute.

Features of monopoly

1. **Single person or a firm:** A single person or a firm controls the total supply of the commodity. There will be no competition for monopoly firm. The monopolist firm is the only firm in the whole industry.
2. **No close substitute:** The goods sold by the monopolist shall not have closely competition substitutes. Even if price of monopoly product increase people will not go in far substitute. For example: If the price of electric bulb increase slightly, consumer will not go in for kerosene lamp.
3. **Large number of Buyers:** Under monopoly, there may be a large number of buyers in the market who compete among themselves.
4. **Price Maker:** Since the monopolist controls the whole supply of a commodity, he is a price-maker, and then he can alter the price.
5. **Supply and Price:** The monopolist can fix either the supply or the price. He cannot fix both. If he charges a very high price, he can sell a small amount. If he wants to sell more, he has to charge a low price. He cannot sell as much as he wishes for any price he

6. **Downward Sloping Demand Curve:** The demand curve (average revenue curve) of monopolist slopes downward from left to right. It means that he can sell more only by lowering price.

Determining the Price and Equilibrium of a Firm under Monopoly :

Under monopoly, for the equilibrium and price determination there are two different conditions which are:

1. Marginal revenue must be equal to marginal cost.

2. MC must cut MR from below.

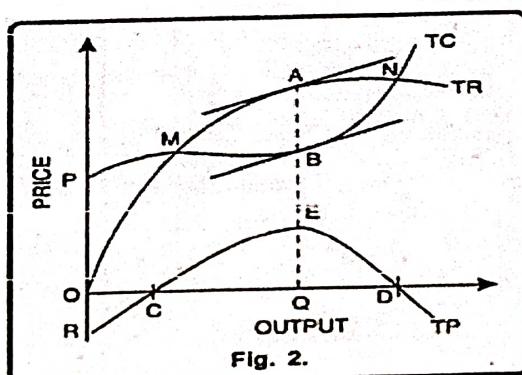
However, there are two approaches to determine equilibrium price under monopoly viz.;

1. Total Revenue and Total Cost Approach.

2. Marginal Revenue and Marginal Cost Approach.

Total Revenue and Total Cost Approach:

Monopolist can earn maximum profits when difference between TR and TC is maximum. By fixing different prices, a monopolist tries to find out the level of output where the difference between TR and TC is maximum. The level of output where monopolist earns maximum profits is called the equilibrium situation. This can be explained with the help of fig. 2.



In Fig. 2, TC is the total cost curve. TR is the total revenue curve. TR curve starts from the origin. It indicates that at zero level of output, TR will also be zero. TC curve starts from P. It reflects that even if the firm discontinues its production, it will have to suffer the loss of fixed costs.

Marginal Revenue and Marginal Cost Approach:

According to marginal revenue and marginal cost approach, a monopolist will be in equilibrium when two conditions are fulfilled i.e., (i) $MC=MR$ and (ii) MC must cut MR from below.

below. The study of equilibrium price according to this analysis can be conducted in two time periods.

1. The Short Run

2. The Long Run

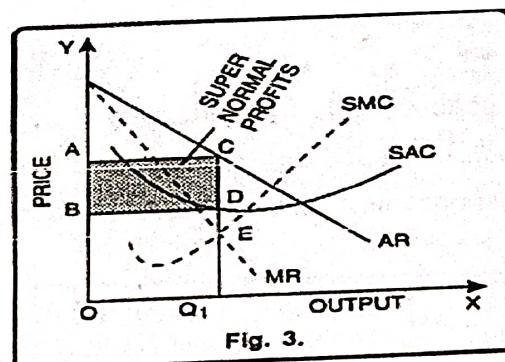
1. Short Run Equilibrium under Monopoly:

Short period refers to that period in which the monopolist has to work with a given existing plant. In other words, the monopolist cannot change the fixed factors like, plant, machinery etc. in the short period. Monopolist can increase his output by changing the variable factors. In this period, the monopolist can enjoy super-normal profits, normal profits and sustain losses.

These three possibilities are described as follows:

Super Normal Profits:

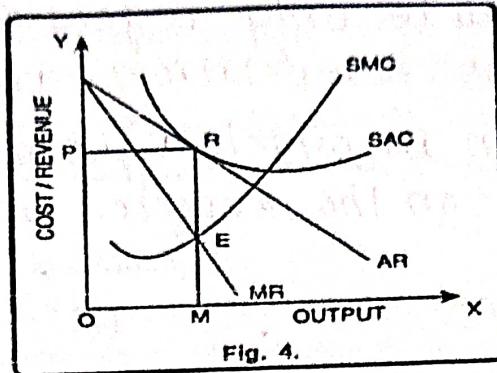
If the price determined by the monopolist is more than AC, he will get super normal profits. The monopolist will produce up to the level where $MC=MR$. This limit will indicate equilibrium output. In Figure 3 output is measured on X-axis and price on Y-axis. SAC and SMC are the short run average cost and marginal cost curves while AR or MR are the average revenue or marginal revenue curves respectively.



The monopolist is in equilibrium at point E because at point E both the conditions of equilibrium are fulfilled i.e., $MR = MC$ and MC intersects the MR curve from below. At this level of equilibrium the monopolist will produce OQ_1 level of output and sells it at CQ_1 price which is more than average cost DQ_1 by CD per unit. Therefore, in this case total profits of the monopolist will be equal to shaded area $ABDC$.

Normal Profits:

A monopolist in the short run would enjoy normal profits when average revenue is just equal to average cost. We know that average cost of production is inclusive of normal profits. This situation can be illustrated with the help of fig 4.



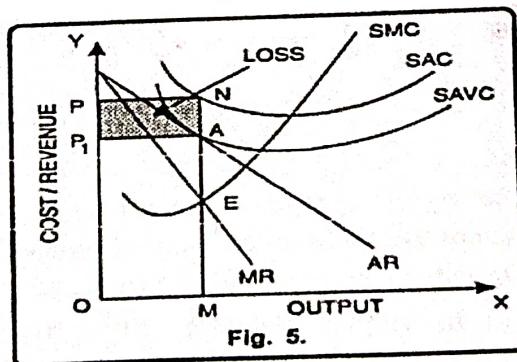
In Fig. 4 the firm is in equilibrium at point E. Here marginal cost is equal to marginal revenue. The firm is producing OM level of output. At OM level of output average cost curve touches the average revenue curve at point P. Therefore, at point 'P' price OR is equal to average cost of the total product. In this way, monopoly firm enjoys the normal profits.

Minimum Losses:

In the short run, the monopolist may have to incur losses. This situation occurs if in the short run price falls below the variable cost. In other words, if price falls due to depression and fall in demand, the monopolist will continue to produce as long as price covers the average variable cost. Once the price falls

Below the average variable cost, monopolist will stop production. Thus, a monopolist in the short run equilibrium has to bear the minimum loss equal to fixed costs. Therefore, equilibrium price will be equal to average variable cost. This situation can also be explained with the help of

Fig. 5.



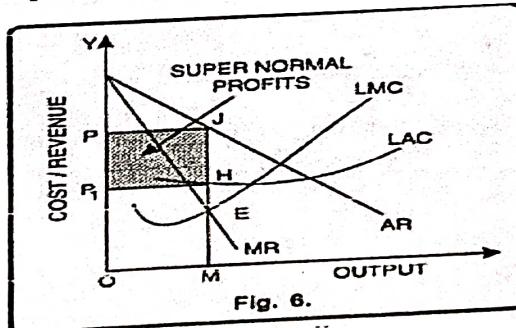
In Fig. 5 monopolist is in equilibrium at point E. At point E marginal cost is equal to marginal revenue and he produces OM level of output. At OM level of output, equilibrium price fixed by the monopolist is OP₁. At OP₁ price, AVC touches the AR curve at point A.

It signifies that the firm will cover only average variable cost from the prevailing price. At OP_1 price, firm will bear loss of fixed cost i.e., Δ per unit. The firm will bear the total loss equal to the shaded area PP_1AN . Now if the price falls below OP_1 , the monopolist will stop production. It is so because if he continues production, he will have to bear the loss of variable costs along with fixed costs.

2. Long Run Equilibrium under Monopoly:

Long-run is the period in which output can be changed by changing the factors of production. In other words, all variable factors can be changed and monopolist would choose that plant size which is most appropriate for specific level of demand. Here, equilibrium would be attained at that level of output where the long-run marginal cost cuts marginal revenue curve from below. This can be shown with the help of Fig. 6.

In Fig. 6 monopolist is in equilibrium at OM level of output. At OM level of output marginal revenue is equal to long run marginal cost and the monopolist fixes OP price. HM is the long run average cost? Price OP being more than LAC i.e., HM which fetch the monopolist super normal profits. Accordingly, the monopolist earns $JM - HM = JH$ super normal profit per unit. His total super normal profits will be equal to shaded area $PJHP_1$.



Session No. 37

Monopolistic competition:

 Monopolistic competition is said to exist when there are many firms and each one produces such goods and services that are close substitutes to each other. They are similar but not identical. Product differentiation is the essential feature of monopolistic. Products can be differentiated by means of unique facilities, advertising, brand loyalty, packaging, pricing, terms of credit, superior maintenance services and convenient location and so on.

Features of Monopolistic:

1. **Existence of Many firms:** Industry consists of a large number of sellers, each one of whom does not feel dependent upon others. Every firm acts independently without

bothering about the reactions of its rivals. The size is so large that an individual firm has only a relatively small part in the total market, so that each firm has very limited control over the price of the product. As the number is relatively large it is difficult for these firms to determine its price-output policies without considering the possible reactions of the rival forms. A monopolistically competitive firm follows an independent price policy.

2. **Product Differentiation:** Product differentiation means that products are different in some ways, but not altogether so. The products are not identical but the same time they will not be entirely different from each other. It really means that there are various monopolist firms competing with each other. An example of monopolistic competition and product differentiation is the toothpaste produced by various firms. The product of each firm is different from that of its rivals in one or more respects. Different toothpastes like Colgate, Close-up, Forehans, Cibaca, etc., provide an example of monopolistic competition. These products are relatively close substitute for each other but not perfect substitutes. Consumers have definite preferences for the particular varieties or brands of products offered for sale by various sellers. Advertisement, packing, trademarks, brand names etc. help differentiation of products even if they are physically identical.
3. **Large Number of Buyers:** There are large number buyers in the market. But the buyers have their own brand preferences. So the sellers are able to exercise a certain degree of monopoly over them. Each seller has to plan various incentive schemes to retain the customers who patronize his products.
4. **Free Entry and Exist of Firms:** As in the perfect competition, in the monopolistic competition too, there is freedom of entry and exit. That is, there is no barrier as found under monopoly.
5. **Selling costs:** Since the products are close substitute much effort is needed to retain the existing consumers and to create new demand. So each firm has to spend a lot on selling cost, which includes cost on advertising and other sale promotion activities.
6. **Imperfect Knowledge:** Imperfect knowledge about the product leads to monopolistic competition. If the buyers are fully aware of the quality of the product they cannot be influenced much by advertisement or other sales promotion techniques. But in the business world we can see that though the quality of certain products is the same, effective advertisement and sales promotion techniques make certain brands monopolistic. For example, effective dealer service backed by advertisement-helped popularization of some brands through the quality of almost all the cement available in the market remains the same.

7. **The Group:** Under perfect competition the term industry refers to all collection of firms producing a homogenous product. But under monopolistic competition the products of various firms are not identical though they are close substitutes. Prof. Chamberlin called the collection of firms producing close subset

Equilibrium of a Firm under Monopolistic Competition:

Let us learn about the short run and long run equilibrium of a firm under monopolistic competition.

Short Run Equilibrium:

Equilibrium of a firm under monopolistic competition is often couched in terms of short period and long period. In the short run, Chamberlin's model of monopolistic competition comes closer to monopoly.

That is to say, there is virtually no difference between monopolistic competition and monopoly in the short run. Thus, Chamberlin's firm may earn supernormal profit, normal profit, or incur loss in the short run—since entry and exit are not allowed during this time period.

In Fig. 5.15, the short run marginal cost curve, SMC, is equal to MR at point E. Thus E is the equilibrium point. Corresponding to this equilibrium point, the firm produces OQ output and sells it at a price OP. Thus, the firm earns pure profit to the extent of PARB since total revenue (OPAQ) exceeds total cost of production (OBRQ).

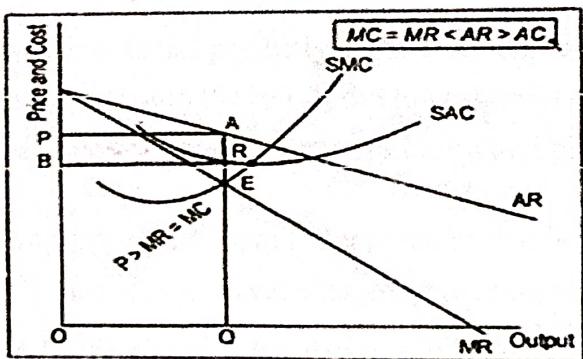


Fig. 5.15: Short Run Equilibrium
(Supernormal Profit: BRAP rectangle)

A firm, in the short run, may earn only normal profit if $MC = MR < AR = AC$ occurs. A loss may result in the short run if $MC = MR < AR < AC$ happens

Long Run Equilibrium:

In the long run, monopolistic competition comes closer to perfect competition because the freedom of entry and exit allows firms to enjoy only normal profit.

Whenever some firms earn pure profit in the long run some other firms may be attracted to join this product group, thereby shifting the demand curve or AR curve downward and to the left.

Thus, entry of new firms would cause decline in market share by reducing the demand for its product.

Consequently, excess profit will be reduced to zero. Further, if the existing firm experiences losses then the exit of firms will bring about an opposite effect and the process will continue until normal profit is earned driving excess profit to zero. Seeing losses for a long time, losing firms may be induced to leave the product group thereby eliminating losses. Thus all firms in the long run earn only normal profit.

Long run equilibrium is achieved at point E where LMC equals MR (Fig. 5.16). The equilibrium output thus determined is OQ_M . At this output, AR equals AC. The firm gets normal profit by selling OQ_M output at the price OP_M . Note that a monopolistically competitive firm always operates somewhere to the left of the minimum point of its AC curve.

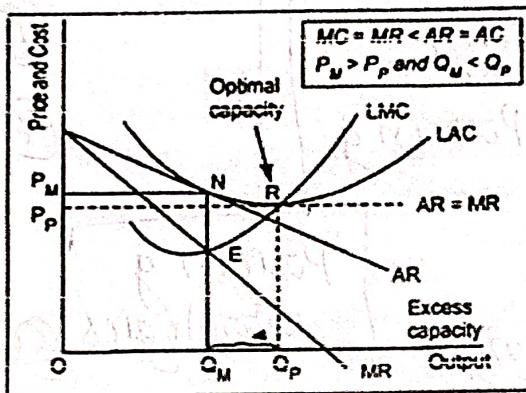


Fig. 5.16: Long Run Equilibrium : Normal Profit

In other words, as the demand curve is not perfectly elastic, or, as the demand curve is negative sloping, the AR curve becomes tangent to the left of the lowest point of the AC curve (say, point N). Each firm thus produces at a cost higher than the minimum and gets only normal profit.

Under perfect competition, long run equilibrium is achieved at that point where $MC = MR = AR = AC$. Because of the perfectly elastic AR curve, a tangency occurs between AR and AC at the latter's lowest point. In Fig. 5.16 the dotted $AR = MR$ curve is the demand curve faced by a competitive firm.

Equilibrium is attained at point R where $LMC = MR = AR = \text{lowest point of LAC}$. The competitive output thus determined is OQ_p which will be sold at the price OP_p . So, we can conclude that monopolistically competitive output (OQ_M) is less than the perfectly competitive output (OQ_p), and monopolistically competitive price (OP_M) is larger than competitive price (OP_p).

Other types of markets:

Duopoly:

Duopoly refers to a market situation in which there are only two sellers. As there are only two sellers any decision taken by one seller will have reaction from the other Eg. Coca-Cola and Pepsi. Usually these two sellers may agree to co-operate each other and share the market equally between them, So that they can avoid harmful competition.

The duopoly price, in the long run, may be a monopoly price or competitive price, or it may settle at any level between the monopoly price and competitive price. In the short period, duopoly price may even fall below the level competitive price with the both the firms earning less than even the normal price.

Monopsony:

The term monopsony to refer to market, which there is a single buyer. Monopsony is a single buyer or a purchasing agency, which buys the show, or nearly whole of a commodity or service produced. It may be created when all consumers of a commodity are organized together and/or when only one consumer requires that commodity which no one else requires.

Bilateral Monopoly:

A bilateral monopoly is a market situation in which a single seller (Monopoly) faces a single buyer (Monopsony). It is a market of monopoly-monopsony.

Oligopsony:

Oligopsony is a market situation in which there will be a few buyers and many sellers. As the sellers are more and buyers are few, the price of product will be comparatively low but not as low as under monopoly.

Session No. 38 & 39

Pricing Methods:

Cost – based pricing methods

1. **Cost plus pricing:** This is also called full cost or mark up pricing. Here the average cost normal capacity of output is ascertained and then a conventional margin of profit is added to the cost to arrive at the price. In other words, find out the product unit's total cost and add percentage of profit to arrive at the selling price.

This method is suitable where the cost keep fluctuating from time to time. It is commonly followed in departmental stores and other retail shops. This method is simple to be administered but it does not consider the competition factor. The competitor may produce the same product at lower cost and thus offer it at a lower price.

2. **Marginal cost pricing:** in marginal cost pricing, selling price is fixed in such a way that it covers fully the variable or marginal cost and contributes towards recovery of fixed costs fully or partly, depending upon the market situations. In times of stiff competition, marginal cost offers a guideline as to how far the selling price can be lowered. This is also called break – even pricing or target profit pricing. How break – even analysis helps in taking pricing decisions.

Competition – oriented pricing:

Some commodities are priced according to the competition in their markets. Thus we have the going rate method of price and the sealed bid pricing technique. Under the former a firm prices its new product according to the prevailing prices of comparable products in the market.

- Sealed bid pricing:** this method is more popular in tenders and contracts. Each contracting firm quotes its price in a sealed cover called tender. All the tenders are opened on a scheduled date and the person who quotes the lowest prices, other things remaining the same, is awarded the contract.
- Going rate pricing:** here the price charged by the firm is in tune with the price charged in the industry as a whole. In other words, the prevailing market price at a given point of time is the guiding factor. When one wants to buy or sell gold, the prevailing market rate at a given point of time is taken as the basis to determine the price, normally the market leaders keep announcing the prevailing prices at a given point of time based on demand and supply positions.

Demand – oriented pricing

The higher the demand, the higher can be the price. Cost is not the consideration here. The key to pricing here is the value as perceived by the consumer. This is a relatively modern marketing concept.

- Price discrimination:** price discrimination refer to the practice of charging different prices to customers for the same good. The firm uses its discretion to charge differently the different customer. It is also called differential pricing. Customers of different profile can be separated in various ways, such as by different consumer requirement by nature of product itself, by geographical areas, by income group and so on.
- Perceived value pricing:** perceived value pricing refers to where the price is fixed on the basis of the perception of the buyer of the value of the product.

Strategy – based pricing:

1. **Market skimming:** when the product is introduced for the first time in the market, the company follows this method. Under this method, the company fixes a very high price for the product. The main idea is to charge the customer maximum possible. For example, Sony introduces a particular TV model, it fixed a very high price and other company.
2. **Market penetration:** this is exactly opposite to the market skimming method. Here the price of the product is fixed so low that the company can increase its market share. The company attains profits with increasing volumes and increase in the market share. More often, the companies believe that it is necessary to dominate the market in the long -run making profit in the short-run.
3. **Two – part pricing:** the firms with market power can enhance profits by the strategy of two – part pricing. Under this strategy, a firm charges a fixed fee for the right to purchase its goods, plus a per unit charge for each unit purchased. Entertainment houses such as country clubs, athletic clubs, golf courses and health clubs usually adopt this strategy. They charge a fixed initiation fee plus a charge, per month or per visit, to use the facilities.
4. **Block pricing:** block pricing is another way a firm with market power can enhance its profits. We see block pricing in our day – to – day life very frequently. Six lux soaps in a single pack or five magi noodles in a single pack.
5. **Commodity bundling:** commodity bundling refers to the practice of bundling two or more different products together and selling them at a single bundle price, the package deals offered by the tourist companies, airlines hold testimony to this practice. The package includes the airfare, hotel, meals, sightseeing and so on.
6. **Peak load pricing:** during seasonal period when demand is likely to be higher, a firm may enhance profits by peak load pricing. The firm philosophy is to charge a higher price during peak times than is charged during off – peak times. APSRTC, air India, jet air etc.,
7. **Cross subsidization:** in case where demand for two products produced by a firm is interrelated through demand or costs, the firm may enhance the profitability of its operation through cross subsidization.
8. **Transfer pricing:** transfer pricing is an internal pricing technique. It refers to a price at which inputs of one department are transferred to another, in order to maximize the overall profits of the company. For example kinetic Honda, hero Honda,

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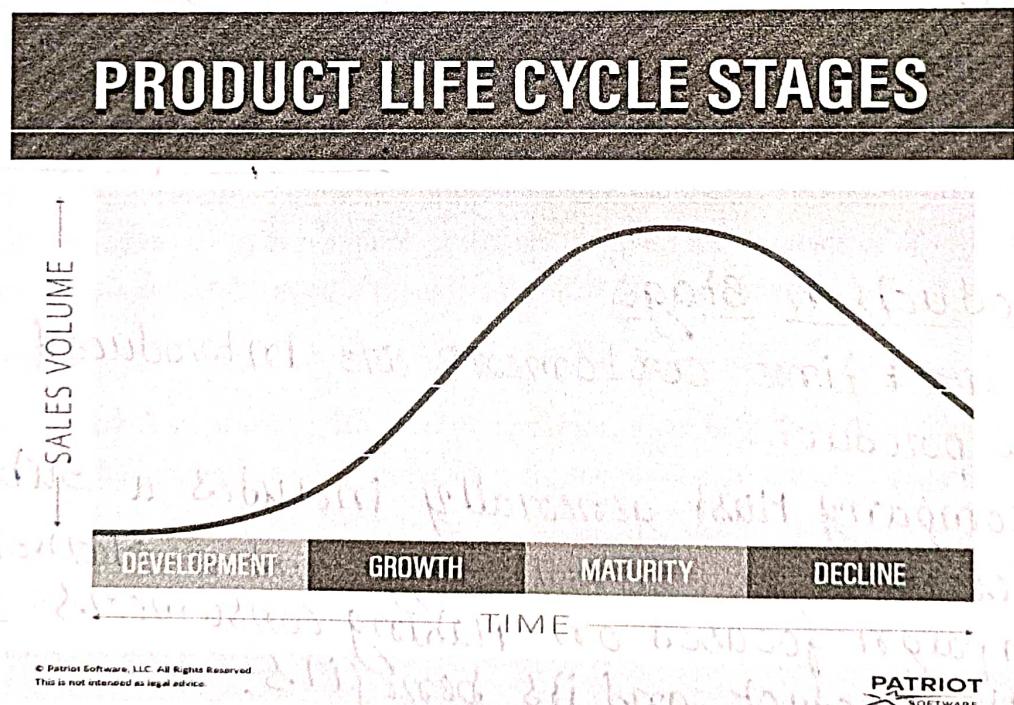
Product life cycle

A product's life cycle is its progress from when it is created to when it is discontinued. There are four stages in the cycle, which are development, growth, maturity, and decline. The product life cycle helps business owners manage sales, determine prices, predict profitability, and compete with other businesses.

Product life cycle management, or PLM, is the process of observing a product throughout its life cycle. Track each product's activities and successes to keep profits high and avoid steep losses.

Product life cycle stages and pricing:

Every product progresses through different stages between its beginning and end on the market. To better manage the product's life cycle, you need to know these four stages.



Understanding how to deal with each new product is important. And, the different stages of the product life cycle help you with strategic pricing. Strategic pricing is when a business decides how to price products or services based on what will attract buyers.

1 Development:

The initial stage of a product's life cycle, development, is when the product is first introduced to the market. Typically, sales are slow during this stage because consumers are unfamiliar with the new product.

Sales are especially slow when the product is unique because consumers might not have an instant demand for it. But, there is generally low competition.

During this stage, you might choose to increase your marketing efforts to raise awareness about the new product. You can promote the product on a budget through outlets like social media channels and your business website. You will need to explain the product in your marketing materials.

Developing a product is expensive, so you might be desperate to make sales. Therefore, you will need to come up with a pricing strategy that fits your business.

Pricing strategy in this stage: Many businesses either price their products low or high, depending on their industry and financial projections.

Pricing products low (market penetration) helps a business penetrate the market and gain consumer attention. Once the business has a loyal customer base, it typically increases prices.

Businesses might choose to introduce products with high prices. You might price products high (price skimming) to try to turn a quick profit and make up for the costs of developing. Pricing products high is especially good if there is a demand for a product and lack of competition.

2. Growth:

During the growth stage of the life cycle of a product, there is high demand for the product and a lot of sales. Though this is a really great stage for the product, there are some drawbacks.

When you sell a product in its growth stage, your competition might begin to duplicate it. Competitors might release the same product you sell at a lower price, or they might work on making the product better.

You might need to work on getting your customers to choose your product over the competition. This could require more marketing and lowering your prices. You might try to market to new customers.

Pricing strategy in this stage: Because of the competition, you might need to lower your prices and adopt a competitive pricing strategy.

3 Maturity:

In the maturity stage, there isn't as much sales growth. When the product is mature, most of your target customers already have the product, so there is not as much demand.

Your sales volume will not be climbing like during the growth stage. Some businesses continue making additions to their products during this stage.

Typically, the maturity stage has the most competition. Once products are developed, they are more unique from competitor to competitor. Many businesses work on marketing their product and emphasizing its uniqueness as well as any discounts.

Pricing strategy in this stage: Many businesses continue using the competitive pricing strategy in the maturity stage. In fact, competition is usually more fierce than in the growth stage. Consider cutting your prices to keep customers, but don't go below your break-even point.

You could also use a discount pricing strategy so that consumers will prefer your product. With a discount pricing strategy, you need to mark down the price.

4 Decline:

The final stage in a product's life cycle is decline. There is less demand for the product, and businesses must decide if they want to discontinue the product or keep producing and selling it. Some businesses that don't pull the product add features to make it stand out more and give it fresh life.

There are a few different reasons for the decline of a product:

- Competitors' products are getting more attention than yours
- Consumers are no longer interested in the product
- You aren't profiting off the product anymore

Pricing strategy in this stage: During a product's decline, many businesses choose to lower its price. In fact, there are a few different pricing strategies you can try in this stage.

You can try a discount pricing strategy to increase customer traffic. This will help free up space at your business for new products.

Another pricing strategy option is bundling. With bundling, you could include the declining product in a deal with other products. This can help get rid of the declining product and increase sales.

Be aware that some businesses choose to do nothing during the decline stage, especially if they are unsure if the product is declining for good or just going through a temporary dip in sales.

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Breakeven analysis

A business is said to break even when its total sales are equal to its total costs. It is a point of no profits no loss. Break even analysis is defined as analysis of costs and their possible impact on revenues and volume of the firm. Hence, it is also called the cost – volume- profit analysis. A firm is said to attain the BEP when its total revenue is equal to total cost.

Assumptions:

1. All costs are classified into two – fixed and variable.
2. Fixed costs remain constant at all levels of output.
3. Variable costs vary proportionally with the volume of output.
4. Selling price per unit remains constant in spite of competition or change in the volume of production.
5. There will be no change in operating efficiency.
6. There will be no change in the general price level.
7. Volume of production is the only factor affecting the cost.
8. Volume of sales and volume of production are equal. Hence there is no unsold stock.
9. There is only one product or in the case of multiple products. Sales mix remains constant.
10. All the goods produced are sold. There is no closing stock.

Significance of BEA

1. To ascertain the profit on a particular level of sales volume or a given capacity of production
2. To calculate sales required to earn a particular desired level of profit.
3. To compare the product lines, sales area, methods of sales for individual company
4. To compare the efficiency of the different firms
5. To decide whether to add a particular product to the existing product line or drop one from it
6. To decide to "make or buy" a given component or spare part
7. To decide what promotion mix will yield optimum sales
8. To assess the impact of changes in fixed cost, variable cost or selling price on BEP and profits during a given period.

tations of BEA

Break – even - point is based on fixed cost, variable cost and total revenue.

A change in one variable is going to affect the BEP

All cost cannot be classified into fixed and variable costs. We have semi-variable costs also

In case of multi-product firm, a single chart cannot be of any use. Series of charts have to be made use of.

5. It is based on fixed cost concept and hence holds good only in the short – run.
6. Total cost and total revenue lines are not always straight as shown in the figure. The quantity and price discounts are the usual phenomena affecting the total revenue line.
7. Where the business conditions are volatile, BEP cannot give stable results

Merits:

1. Information provided by the Break Even Chart can be understood more easily than those contained in the profit and Loss Account and the cost statement.
2. Break Even Chart discloses the relationship between cost, volume and profit. It reveals how changes in profit. So, it helps management in decision-making.
3. It is very useful for forecasting costs and profits long term planning and growth
4. The chart discloses profits at various levels of production.
5. It serves as a useful tool for cost control.
6. It can also be used to study the comparative plant efficiencies of the industry.
7. Analytical Break-even chart present the different elements, in the costs – direct material, direct labour, fixed and variable overheads.

Demerits:

1. Break-even chart presents only cost volume profits. It ignores other considerations such as capital amount, marketing aspects and effect of government policy etc., which are necessary in decision making.
2. It is assumed that sales, total cost and fixed cost can be represented as straight lines. In actual practice, this may not be so.
3. It assumes that profit is a function of output. This is not always true. The firm may increase the profit without increasing its output.
4. A major drawback of BEC is its inability to handle production and sale of multiple products.
5. It is difficult to handle selling costs such as advertisement and sale promotion in BEC.
6. It ignores economics of scale in production.
7. Fixed costs do not remain constant in the long run.
8. Semi-variable costs are completely ignored.
9. It assumes production is equal to sale. It is not always true because generally there may be opening stock.
10. When production increases variable cost per unit may not remain constant but may reduce on account of bulk buying etc.
11. The assumption of static nature of business and economic activities is a well-known defect of BEC.

Determination of Break Even point

1. Fixed cost
2. Variable cost
3. Contribution
4. Margin of safety
5. Angle of incidence
6. Profit volume ratio

Fixed cost: Expenses that do not vary with the volume of production are known as fixed expenses. Eg: Manager's salary, rent and taxes, insurance etc. It should be noted that fixed

Charges are fixed only within a certain range of plant capacity. The concept of fixed overhead is most useful in formulating a price fixing policy. Fixed cost per unit is not fixed.

Variable Cost: Expenses that vary almost in direct proportion to the volume of production or sales are called variable expenses. Eg. Electric power and fuel, packing materials consumable stores. It should be noted that variable cost per unit is fixed.

Contribution: Contribution is the difference between sales and variable costs and it contributed towards fixed costs and profit. It helps in sales and pricing policies and measuring the profitability of different proposals. Contribution is a sure test to decide whether a product is worthwhile to be continued among different products.

$$\text{Contribution} = \text{Sales} - \text{Variable cost}$$

$$\text{Contribution} = \text{Fixed Cost} + \text{Profit}.$$

Margin of safety: Margin of safety is the excess of sales over the break even sales. It can be expressed in absolute sales amount or in percentage. It indicates the extent to which the sales can be reduced without resulting in loss. A large margin of safety indicates the soundness of the business. The formula for the margin of safety is:

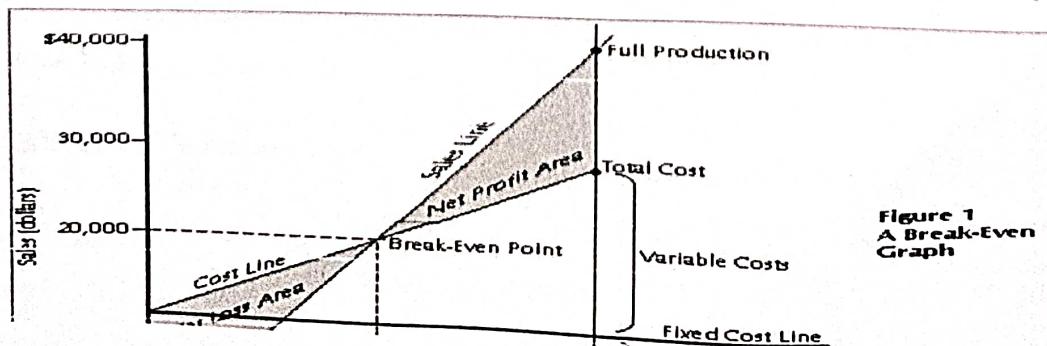
$$\text{Present sales} - \text{Break even sales} \text{ or Profit/P. V. ratio}$$

Margin of safety can be improved by taking the following steps.

1. Increasing production
2. Increasing selling price
3. Reducing the fixed or the variable costs or both
4. Substituting unprofitable product with profitable one.

Angle of incidence: This is the angle between sales line and total cost line at the Break-even point. It indicates the profit earning capacity of the concern. Large angle of incidence indicates a high rate of profit; a small angle indicates a low rate of earnings. To improve this angle, contribution should be increased either by raising the selling price and/or by reducing variable cost. It also indicates as to what extent the output and sales price can be changed to attain a desired amount of profit.

Profit Volume Ratio is usually called P. V. ratio. It is one of the most useful ratios for studying the profitability of business. The ratio of contribution to sales is the P/V ratio. It may be expressed in percentage. Therefore, every organization tries to improve the P. V. ratio of each product by reducing the variable cost per unit or by increasing the selling price per unit. The concept of P. V. ratio helps in determining break even-point, a desired amount of profit etc.



FORMULAE OF BEP

1. Margin of Safety (In Units)=Actual Sales(In Units)- Break Even Sales (In Units)
2. Margin of Safety (In Value)=Actual Sales(In Value)- Break Even Sales (In Value)
3. Margin of Safety = Profit/Pv Ratio
4. P/V Ratio= (Contribution/Sales)*100 Or(Fixed Cost/Breakeven Point)*100
5. Selling Price= Fixed Cost+ Variable Cost + Profit
6. Contribution=Fixed Cost+ Profit Or Selling Price- Variable Cost
7. Contribution Per Unit Or Contribution Margin Per Unit=Selling Price Per Unit- Variable Cost Per Unit
8. Breakeven Point (In Units)= Fixed Cost/ Contribution Margin Per Unit
9. Breakeven Point (In Rs.)= Fixed Cost/ Contribution Margin Ratio
10. Contribution Margin Ratio=(Selling Price Per Unit- Variable Cost Per Unit)/ Selling Price Per Unit
11. To Ascertain The Volume Of Sales Required To Achieve A Targeted Amount Of Profit=(Fixed Cost + Targeted Profit)/Contribution Margin Ratio

Formulas When Two Years Data Is Provided

1. P/V Ratio= (Change In Profit/Change In Sales)*100
2. Contribution= Sales*P/V Ratio
3. Fixed Cost=Contribution-Profit

Problems With Solutions

1. Calculate contribution

When sales =Rs.100000 variable cost= rs.30000, fixed cost = rs.20000

Solution:

Contribution=sales-

variable cost

Contribution=100000-

30000= 70000

1. Calculate P/V Ratio

When sales =Rs.100000 variable cost= rs.40000, fixed cost = rs.20000

Solution:

$$P/V \text{ RATIO} = (\text{CONTRIBUTION}/\text{SALES}) * 100$$

$$= (60000/100000) * 100 = 60\%$$

2. Calculate P/V ratio

	2015	2016
Sales	100000	150000
Profit	30000	50000

Solution:

$$P/V \text{ Ratio} = (\text{Change In Profit}/\text{Change In Sales}) * 100$$

$$= (20000/50000) * 100 = 40\%$$

3. Calculate Break-Even Analysis

When sales =Rs.200000 variable cost= rs.100000, fixed cost = rs.30000

Solution:

$$\text{Breakeven Point (In Rs.)} = \text{Fixed Cost} * \text{sales} / \text{Contribution}$$

$$= (30000 * 20000) / 100000 = \text{Rs.}60000$$

5. Calculate Breakeven Point in units

Production=3000 units, fixed cost= Rs.20000, selling price p.u=Rs.30,

Variable cost p.u.=Rs.20

Solution:

$$\text{Breakeven Point (In units)} = \text{Fixed Cost} / \text{Contribution Margin}$$

$$p.u \ 20000 / (30 - 20) = 2000 \text{ units}$$