

Sales and Marketing Management

31.1. INTRODUCTION

- Business functions can be broadly divided into three areas, namely
 - (i) Finance,
 - (ii) Production, and
 - (iii) Sales.
- Sales function is a very vital phase of the business.
- Actually, the major problem of today's business is not that of production but it is that of sale. With the immense competition at every step of marketing, the problem of sales has outstripped the problem of production.

31.2. SALES MANAGEMENT

- *Sales Management* is the term applied to the process of distributing goods from the producer to the ultimate user. It consists of *advertising and selling, storing, transporting and handling and financing or risk-taking.*
- The three biggest problems which seem to be attached with Sales Management are,
 - (a) Managing sales force and making them understand the definition of their jobs, i.e., the sales force must know who is selling what, where and to whom.
 - (b) Compensation of salesmen, i.e., rewarding sales force suitably.
 - (c) Training of sales force.

31.3. SALES (MARKETING) ORGANIZATION

- The actual organization of the sales force or sales department is largely determined
 - (1) by function;
 - (2) by area;
 - (3) by product group;
 - (4) by customer category and end-user category.

1. Functional Organization

- The functional organization (Fig. 31.1) is usual for the small or medium sized company with a limited range of related products.
- Functional organization has various functional (marketing) departments or specialists reporting to a sales or a marketing director.
- Functional organization has the *advantage* of administrative simplicity.
- Functional organization suffers from certain *disadvantages* such as
 - (a) Inadequate detailed planning for specific products and markets, since no body is assigned full responsibility for any product or market.
 - (b) Products that are not favourites with various functional specialists tend to get neglected.

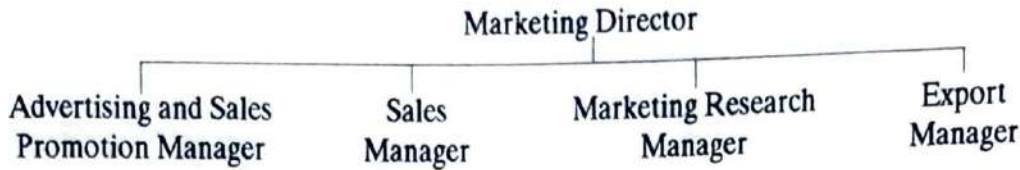


Fig. 31.1. Functional Organization.

2. Area Based Organization

The area based organization (Fig. 31.2) is one of the more common ones in use for concerns with a relatively limited range of products requiring selling and distribution to be on a more or less nationwide scale through many outlets.

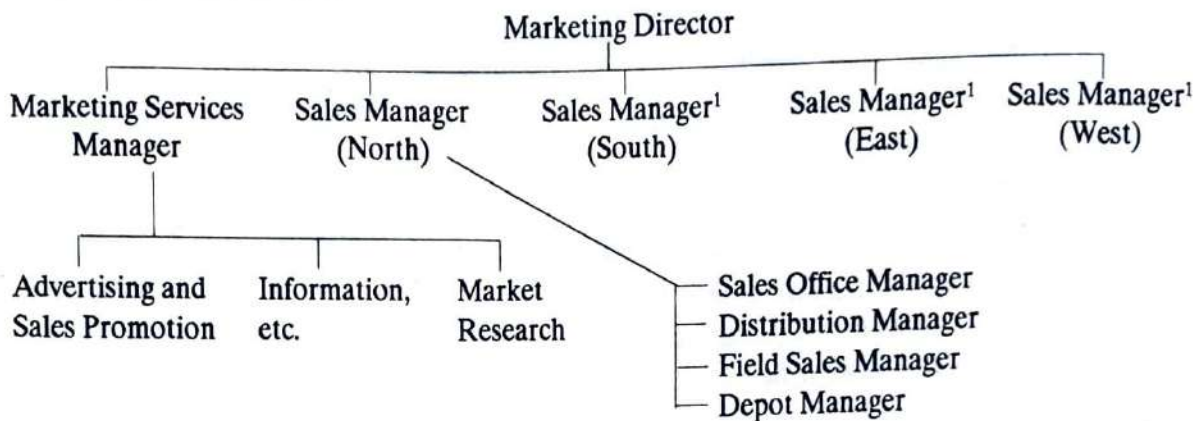


Fig. 31.2. Area Based Organization.

3. Product Group Organization

- This type of sales organization (Fig. 31.3) is employed when there is a wide range of relatively unrelated product groups which require different selling methods and the company sales forces require their own particular market and technical knowledge.

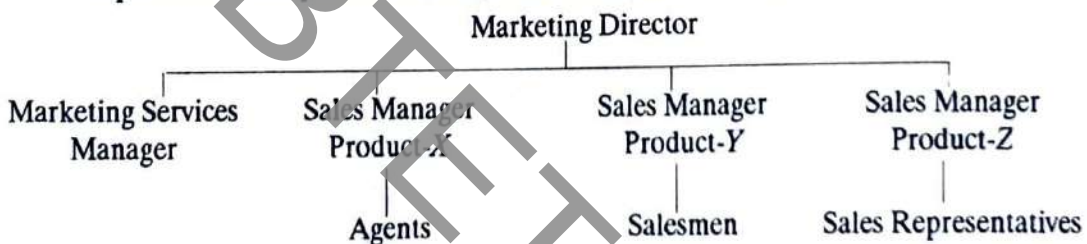


Fig. 31.3. A Product Group Organization.

4. End Use and Customer Class Sales Organization

- If an enterprise is selling a substantial range of products to dissimilar types of customers or for different uses, the selling operations are split up by type of customer or end use.
- Separate sales forces are necessary.
- However, marketing services may either be kept centralised or again split up as per the particular division of the selling operations.
- Fig. 31.4 shows the end use sales organization and Fig. 31.5 the customer class sales organization.

1. Sales Managers, South, East and West have similar sub-organizations as that of Sales Manager (North).

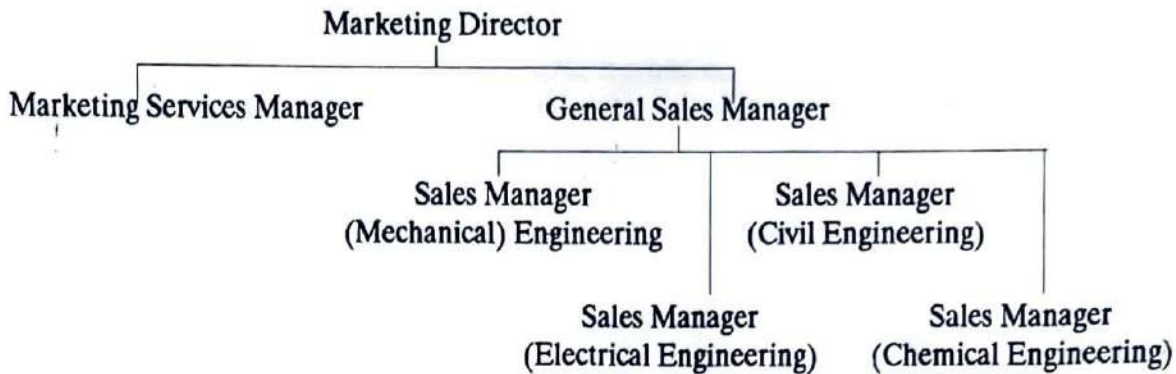


Fig. 31.4. End use sales organization.

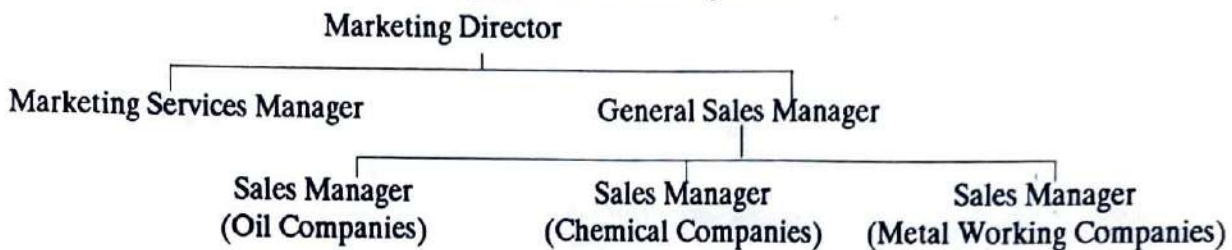


Fig. 31.5. Customer class sales organisation.

- Fig. 31.6 shows a general organization of the sales department of an engineering company.

31.4. FUNCTIONS OF SALES DEPARTMENT

- (i) Analysing markets thoroughly.
- (ii) Studying consumer's psychology and demand.
- (iii) Studying the conditions existing in competitive firms.
- (iv) Studying the market fluctuations.
- (v) Preparing market, sales and other relevant business forecasts.
- (vi) Assisting in the preparation of marketing plan.
- (vii) Preparing the sales budgets from the marketing plan.
- (viii) Deciding on the distribution policy, methods and network.
- (ix) Planning of the advertising campaign.
- (x) Ensuring suitable packing of the products.
- (xi) Creating communications network for the department.
- (xii) Developing systems for sales reporting and statistical analysis.
- (xiii) Providing technical advisory and other services to the customers.
- (xiv) Determining sales staff requirements and handling the recruitment, training and compensation of sales staff.
- (xv) To explore newer markets for selling the company products.
- (xvi) Ensuring effective coordination with production and financial departments.
- (xvii) Striving continuously to lower selling costs, to expand sales and to improve the product for its wider acceptability.

31.5. DUTIES OF SALES MANAGER

A good idea of the duties of Sales Manager can be had from the section 31.4.

31.6. DUTIES OF SALESMAN (SALES ENGINEER)

- The distinction between a salesman and a manager of a market area is important ; it is the difference between viewing salesmen as employees or as members of management.
- A salesman's job may be seen as that of managing a market area or the salesman may be looked upon as an order taker.
- In general, a salesman may perform as many as five different activities such as :



Fig. 31.6. Sales Organisation of a Company.

1. *Prospecting*, i.e., a salesman is expected to search for additional (business) prospects.
2. *Communicating* information pertaining to company's products and services to existing and potential customers.
3. *Selling company products*.
4. *Servicing*, i.e., providing service to different customers. Service includes providing technical help, expediting delivery, etc.
5. *Collecting Information*, i.e., conducting market research and supplying regular reports on his findings to the company.

31.7. THE SELLING CONCEPT VERSUS MARKETING CONCEPT

- The Selling Concept

The selling concept is a management orientation that assumes that consumers will normally not buy enough of the company's products unless they are approached with a substantial selling and promotion effort.

- The Marketing Concept

The marketing concept is a management orientation that holds that the key task of the organisation is to determine the needs, wants, and values of a target market and to adopt the organisation to deliver the desired satisfaction more effectively and efficiently than its competitors.

- The selling concept and the marketing concept are generally confused by many businessmen and by the public. The two orientations distinctly differ from each other (Fig. 31.7) for example :

- (i) Selling focuses on the needs of the seller whereas marketing focuses on the needs of the buyer.

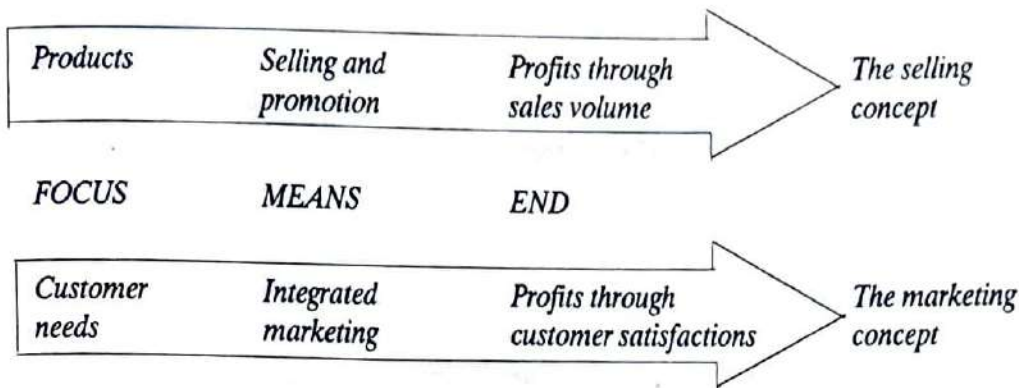


Fig. 31.7. Contrast between the sales concept and marketing concept.

- (ii) Selling is preoccupied with the seller's need to convert his products into cash, whereas marketing lays emphasis on satisfying the needs of the customer by means of the product. Marketing tries to know and understand the customer as well as the product or service that fits him and sells itself; marketing results in a customer who is ready to buy himself.
- (iii) Actually, Marketing is another name for selling, with the inference that it is a rather long-haired method.
- (iv) Marketing is a more expensive way of selling.

31.8. MARKETING, DEFINITION, PRINCIPLE AND FUNCTIONS

31.8.1. Introduction

- Marketing has its origins in the fact that man is a creature of needs and wants. Needs and wants create a state of discomfort in persons and they tend to get objects (*i.e.*, products) those satisfy these needs and wants. For example in the months of summer, if in an area, ice is not freely available or when eatables tend to get distasted in summer, persons feel discomfort and they satisfy their needs by purchasing a refrigerator.
- The word marketing has been derived from **Market** which may be looked upon as an arena for potential exchanges, *i.e.*, a place where products can be exchanged by money or anything else, *e.g.*, a political candidate offers promises of good government to a voter market in exchange for their votes.

There are need markets, product markets, demographic markets, geographic markets, etc.

The size of the market depends upon the number of persons who have both

- an interest in the product; and
- are willing to offer something (say money) in exchange of the product.

31.8.2. Definition

- The concept of markets leads to the concept of marketing.
- Marketing** means working with markets, *i.e.*, trying to actualize potential exchanges for the purpose of satisfying human needs and wants.
- Marketing**, therefore, may be defined as human activity directed at satisfying needs and wants through exchange processes; examples of human needs and wants are food, water, clothing, education and other services.
- Marketing in its broad meaning includes the policy, techniques and methods necessary for selling and distribution. Without marketing function, goods and services cannot be sold.

- Marketing is the total commercial and support activities of any enterprise to effect sales of company end products or services.
- Marketing involves planning and execution of all aspects and activities of a product so as to exert optimum influence on the consumer to result in maximum consumption at the optimum price and therefore producing the maximum long term profit.

31.8.3. Principles

The five basic principles of sound marketing are described below :

1. Marketing must provide a means of classifying, assessing and integrating information relevant to a business.
2. It must provide a sound base for thinking about and studying business problems and provide methods to draw correct conclusions which form basis for action.
3. Marketing must be able to explain, predict and control the process it employs.
4. Marketing must use analytical methods such as O.R., Statistics, Computer Technology, etc., to solve its problems.
5. Marketing should allow the derivation of a number of its principles adaptable to any particular business.

31.8.4. Functions/Objectives

The functions, aims and objectives of marketing are :

- (i) To give direction and purpose to the marketing division as a whole as well as to its various departments.
- (ii) To place present activities in perspective.
- (iii) To discipline various future activities.
- (iv) To place tactical plans correctly in the strategic setting.
- (v) To set growth targets.
- (vi) To establish the organisation and the methods which will be required.

31.9. MARKETING MANAGEMENT AND ITS FUNCTIONS

31.9.1. Concept

- The marketing management concept, which is a break through in the management thinking, by its very nature implies a Systems Approach to the management of marketing effort.
- Marketing management requires a recognition of the interrelations and interconnections between marketing and other business elements.
- Marketing management involves the integration of all the components of the marketing programme into a co-ordinated marketing mix. It demands the establishment of a communications network and linkages between the various functionaries and activities necessary for the accomplishment of marketing missions.
- Marketing management concerns itself with the flow of information and resources through a firm to the market place. Even the implementation of the marketing concept requires the grouping of marketing activities and the designation of a top-level executive to integrate both authority and responsibility.
- Marketing management is historically identified with the specialised job of dealing with the customer market for the end products or services of the company.

31.9.2. Definition

- Marketing Management is the analysis, planning, implementation and control of programmes designed to bring about desired exchanges with target markets for the purpose of achieving objectives of the organisation. Marketing Management relies heavily on designing the organization's offering in terms of the target market's needs and desires and using effective pricing, communication, and distribution to inform, motivate and service the market.

31.9.3. Functions

The broad functions of marketing management consist of the following :

1. Marketing Research,
2. Sales Forecasting,
3. Advertising,
4. Sales promotion,
5. Selling,
6. Handling of inquiries and orders from customers,
7. Packing, and
8. Servicing.

31.10. MARKETING RESEARCH

31.10.1. Concept and Definition

- An industrial enterprise, if, develops products for direct market application without having any idea in advance of consumer acceptance of that product, takes quite a risk (if the product is unaccepted).

On the contrary, if another concern tends to learn consumer reaction to the product prior to manufacturing the same, it does not involve any risk associating high expenditures.

- Market research, today, has come to be a very important part of the marketing function. Market research when properly conducted and used on a regular basis is just as valuable to the manufacture as is Technical Research and ensures the continued vitality of a business.
- **Market research** may be defined as an organised approach which includes all research activities involved in marketing problems :
 - (i) gathering, recording and analysing the utility and marketability of the product;
 - (ii) the nature of demand;
 - (iii) the nature of competition;
 - (iv) the methods of marketing; and
 - (v) other aspects of movement of products from the stage of production to the point where they get consumed.
- Market research provides an effective sales forecast.
- Market research promotes soundness of marketing decisions.
- **Marketing** or **Market research** gathers records and analysis all facts about problems relating to the transfer and sale of goods and services from producer to consumer. Essentially it is designed to discover not only how much the company can hope to sell, but where, to whom and how.
- Some part of the *research* can be done right in the company's own office through the use of its recorded data, a *form* of market research known as *sales analysis*. This should provide information on which products are selling best, in what markets, and to what type of customer. It is very important that sales records be set up to yield this type of data in usable form.

- Other sources of information on markets are the published statistics that give an indication of the size of the potential market in various localities. Government and consultants are valuable sources of this type of information.

31.10.2. Objectives of Marketing Research

- Market research determines who and where the customer is; what are his needs and wants; what will he buy; where and how he will buy; and how much he will pay.
- Market research tells the future of existing products and the products yet to be introduced into the market.
- Market research measures sale trends and sales potential.
- Market research analysis distribution, economic trends, and profitability.
- Market research determines advertising effectiveness, consumer reaction and dealer reaction.
- Market research studies market potential and market share.
- Market research conducts demand and price studies.
- Market research popularises the company products and makes them acceptable to the consumers.
- Market research keeps a business in touch with its markets.
- Market research explores new markets and helps developing new products.
- Market research safeguards the interests of the company against unforeseen changes in the market.
- Market research guides sales promotion efforts.
- Market research analysis user characteristics, attitudes, and opinions with particular emphasis on any shift in market composition or personal preferences.

31.10.3. Scope of Marketing Research

- Major marketing research activities are :
 1. Measurement of market potential,
 2. Determination of market characteristics,
 3. Market share analysis,
 4. Competitive product studies,
 5. New product acceptance and potential,
 6. Short and long range forecasting,
 7. Studies of business trends,
 8. Establishment of sales quotas and territories,
 9. Testing of existing products,
 10. Product mix studies,
 11. Acquisition studies,
 12. Studies of advertisement effectiveness,
 13. Media research,
 14. Pricing studies,
 15. Plant and warehouse location studies,
 16. Packaging research, and
 17. Distribution channel studies, etc.

31.10.4. Market Research Procedure

1. Define the problem clearly.

2. Develop a clear set of research objectives.
3. Supervise or subcontract the task of collecting the data from existing and would be consumers, etc.
4. Extract meaningful information from the collected data.
5. Prepare a report presenting the major findings and recommendations coming from the study.

31.10.5. Market Research Techniques

Some of the techniques used by persons engaged in market research for collecting the data [refer(3) of Market Research Procedure] are as follows :

1. Desk research

The data is collected from the information published by the company or outside sources, e.g. government agencies, trade associations, etc. Desk research is done on :

- (a) *Sales analysis*, i.e. past sales, fluctuations sales and promotional expenditures, economics of order size, etc.
- (b) *Correlation studies*, concerned with finding the relationship between two or more variables, e.g., number of new cars produced and number of car batteries sold.
- (c) *Ratios*, such as stock-turn (the relationship between sales and stocks), profit per rupee invested (earnings/capital) etc.

2. Postal Questionnaire

Carefully prepared questionnaires, consisting of questions—short, specific and statistical or open-minded are posted to a selected sample of respondents for collecting specific data from them.

3. Telephone interviews

Telephone interviews are conducted at a personal level with a selected sample of people for collecting their views.

4. Personal Interviews

Personal interviews are conducted on a simple question and answer basis. Such interviews give best results with greater reliability.

5. Observational Method

The marketing research personnel silently observe others and collect the desired information, e.g., by standing outside or in a wine shop, the brands more frequently purchased can be found out.

6. Statistical Methods

- Statistical methods make use of large precollected data and logically conclude the market investigations.
- Bar chart, histogram, frequency polygon, frequency distribution curve and the concepts of average, median, and standard deviation help serve the purpose.
(Refer Chapter number 8 for details).

31.11. SALES FORECASTING

31.11.1. Introduction and Importance

- Forecasting is essentially the art of anticipating what buyers are likely to do under a given set of conditions.
- The market research conducted by a firm plus the analyses of current sales experience and trends, form the basis for the construction of a sales forecast.
- The sales forecast is a commitment on the part of the sales department and each of its divisions of the expected sales likely to be achieved in a given period at stated prices.
- Sales forecasting should be very accurate because production and stock holding plans and the whole train of events following from these are based on them.

Cost Accounting and Control

27.1. INTRODUCTION

(a) Cost

Cost may be defined as the amount of expenditure (actual or notional) incurred on, or attributable to, a given thing.

The word *cost* is rarely used independently; it is always related to a particular thing, e.g., number of goods produced, etc.

(b) Accounting

Accounting may be defined as the *art and science* of recording business transactions in a methodical manner so as to show

- the true state of affairs of a business at a particular instant of time, and
- the deficiency or surplus which has accrued during a specific time period.

Accounting uses words and figures to communicate the transactions which have been entered into.

(c) Cost Accounting (or Costing) and Need for it

- *Costing* is frequently looked upon as the operation of calculating the cost of an article (for sale) as a basis to fix its selling price.
- Costing implies the techniques and processes of ascertaining costs of given things or items.
- *Costing* involves

(i) classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services;

(ii) the relation of these costs to sales values; and

(iii) the ascertainment of profitability.

- Costing or cost accounting deals with the internal affairs of a business. It attempts to show the results of the operations carried out and emphasises throughout the measurement and achievement of efficiency.

- Through costing, the costs are ascertained by

(i) predetermined standards, combined with subsequent analysis of variances between those standards and the actual cost incurred; or

(ii) historically, that is, after they have been incurred.

(iii) the use of marginal methods of presentation for either (i) or (ii), involving the differentiation between *variable* and *fixed* costs.

Cost accounting may also be defined as the process of accounting for cost from the point at which expenditure is incurred to the establishment of its ultimate relationship with cost centres (e.g., a location, item of equipment, person, etc.) and cost units (e.g., a unit or quantity of product service, etc.).

- The cost accounting becomes the basis of *cost control systems* and *budgetary control plans* (refer chapter No. 28).

Cost control and budgetary control are both essential because they permit management to plan ahead and to know when to make changes in order to fulfill the plan related to the operation of a modern industrial unit.

- **Cost accounting is necessary because it provides information for,**
 - (i) Determining, classifying and analysing the cost and income of a business enterprise.
 - (ii) Determining the prices to be quoted to customers.
 - (iii) Forming basis for managerial decisions that have to do with,
 - (a) Make or Buy (decision).
 - (b) To introduce a new product or to drop an existing one.
 - (c) To sell products in some more territories or to drop some present ones.
 - (iv) Cost control through accumulation and utilisation of cost data.
 - (v) Profitability of products.
 - (vi) Budgeting (Planning, co-ordination and control through budgets).
 - (vii) Standard costing.
 - (viii) Continuation of business.
 - (ix) Proper matching of costs with revenues.
 - (x) Control of materials and supplies.
 - (xi) Wages and overheads costs.
 - (xii) Establishing standards for measuring efficiency.
 - (xiii) Curtailment of losses due to seasonal conditions.
 - (xiv) Determining expansion and contraction policies (refer (iii) above).

(d) Cost Control, Necessity and importance

- Cost accounting helps control of expenditure or cost.
- Cost control leads to efficiency in use of material, machinery and labour.
- The profit making capacity of a business is guided by the efficiency with which various costs are controlled.
- Cost control provides a basis for minimising the cost or cost-reduction.
- Costs and accounts are classified to make clear the nature of expenditure or cost. Cost control works through a comparison of actual costs against predetermined standards as regards material, labour, etc.
- Cost control and hence cost reduction is necessary in order to
 - (1) stand in competition in a specific product line;
 - (2) reduce the selling price of a product to broaden its market.

27.2. ELEMENTS OF COST

- The costs of an industrial enterprise may be divided into three principle elements, namely :
 1. Material.
 2. Labour.
 3. Expense.

1. Material cost

- It is the cost of commodities supplied to an undertaking.

– It is of two types :

(a) *Direct material cost.*

(b) *Indirect material cost.*

(a) *Direct material cost*

– A direct material is one which goes into a salable product or its use is directly essential for the completion of that product, e.g., a H.S.S. bit for making a turning tool for lathe; Fe, Ni, Cr. etc., to make alloy steels.

– The amount paid for or the money spent on direct materials is known as *Direct material cost*.

– Since, direct material used can be traced to a specific product and its cost becomes part of the prime cost, the direct material cost can be controlled in a positive way.

(b) *Indirect material cost*

– An indirect material is one which is necessary in the production process but is not directly used in the product itself, e.g., it does not become an integral part of the product, e.g., cotton waste, greases, oils, sandpaper, etc.

– The costs associated with indirect materials is called *Indirect material cost*.

The same material may be a direct material for one producer and an indirect material for another.

Some direct materials are in certain cases, used so little that it is not worth-while to identify and charge them as direct materials. Nails, glue and sometimes paints, are a few examples. Under such conditions, these materials are generally charged as indirect materials, or overheads.

2. Labour cost

It is the cost of remuneration (Wages, salaries, commissions, bonuses, etc.) of the employees of a concern or enterprise. Like material cost, labour cost is also classified as

(a) *Direct labour cost.*

(b) *Indirect labour cost.*

(a) *Direct labour cost*

– The direct labour cost is the cost of labour that can be identified directly with the manufacture of the product and allocated to, cost centres¹ or cost units².

– A direct labourer is one who converts the direct material into salable products; the wages, etc. of such employees constitute *Direct labour cost*.

– The wages of a welder fabricating a structure form a part of the total direct labour cost.

– Direct labour cost may be apportioned to the unit of cost or job either on the basis of time spent by a worker on the job or as a price for some physical measurement, (e.g., quantity) of the product.

(b) *Indirect labour cost*

– It is that labour cost which cannot be allocated but which can be apportioned to, or absorbed by, cost centres or cost units.

– This is the cost of the labour that does not alter the construction, conformation, composition or condition of the direct material but is necessary for the progressive movement and handling of the product to the point of despatch. Examples of *Indirect* or *non-productive* workers are : maintenance men, helpers (in a machine shop or foundry), machine setters, supervisors and foremen, etc.

1. *Cost Centres* : A person, location or an equipment (or a group of these) for which costs may be ascertained and used for the purposes of cost control.

2. *Cost Unit* : A unit or quantity of product, service or time (or a combination of these) in relation to which costs may be ascertained.

3. Expense

- It is a collective title which refers to all charges other than those incurred as direct result of employing workers or obtaining material.
- Expenses include the cost of services provided to an undertaking and the notional cost of the use of owned assets.
- Expenses may be of two types :

(a) *Direct expenses.*

(b) *Indirect expenses.*

(a) *Direct expenses*

- These are the expenses which can be identified with, and allocated to, cost centres or cost units.
- The following examples of direct expenses will clarify the idea :

(1) Costs of special layouts, designs or drawings produced for a specific job are the direct expenses of such a job, provided,

- layouts, designs or drawings are totally consumed on the job, or
- though they can be used again but there are hardly any chances of their being used again.

(2) Hire of special or single purpose machine tools or other equipments for completing a particular production order.

(b) *Indirect expenses*

- These are the expenses which cannot be allocated but which can be apportioned to, or absorbed by, cost centres or cost units.
- Examples of indirect expenses are

Rent of the building.

Insurance premium.

Telephone bill, etc.

(i) *Fixed expenses*

- Fixed expenses are those costs that tend to remain relatively constant regardless of the volume of production.
- Examples of fixed expenses are,
 - * Taxes on land and building.
 - * Depreciation arising from time.
 - * Rent.

(ii) *Variable expenses*

- Variable expenses are those which tend to vary directly with the volume of production.
- Examples of variable expenses are,
 - * Royalties paid on a volume basis (as in case of gramophone records),
 - * Depreciation arising from use.

27.3. PRIME COST

Prime cost = Direct material cost.

+ Direct labour cost.

+ (Variable) direct expenses.

- Prime cost is limited in its use to the manufacturing division of a business concern.

27.4. OVERHEADS

- *Indirect costs, Overheads, Oncost and Burden* are synonymous terms.
- Overheads are all expenses other than direct expenses.
- *Overhead* is defined as the cost of indirect material, indirect labour and such other indirect expenses, including services, as cannot conveniently be charged direct to specific cost units.
- The main groups into which *overhead* may be subdivided are
 - (a) Production or manufacturing overhead, including services.
 - (b) Administration overhead.
 - (c) Selling overhead.
 - (d) Distribution overhead.
 - (e) R & D overhead.

(a) Production or manufacturing overhead

- It includes all indirect expenses incurred by the concern from the receipt of the production order until its completion, i.e., it being ready for despatch to the customer.
- Typical manufacturing overhead costs are :
 1. Building expenses
 - Rent
 - Insurance
 - Repairs
 - Heating and lighting
 - Depreciation, etc.
 2. Indirect labour
 - Supervisors and foremen
 - Machine setters
 - General workers
 - Maintenance men
 - Shop clerk
 - Shop inspectors, etc.
 3. Water, Fuel and Power (steam, gas, electric, pneumatic, hydraulic).
 4. Consumable stores such as cotton waste, grease, etc.
 5. Plant maintenance and depreciation.
 6. Sundry expenses such as those of,
 - * employment office,
 - * security,
 - * all forms of welfare,
 - * recreation and rest rooms, etc.

(b) Administration overhead

- Administration overhead consists of expenses incurred in the direction, control and administration of an enterprises.
- Administration overhead is the expense of providing a general management and clerical service.
- Examples of administration overhead :
 - Office rent.
 - Salaries and wages of clerks.
 - Director's, general manager's fees.

Insurance.
Legal costs.
Rates and Taxes.
Postage and telephones.
Audit fees.
Bank charges, etc.

(c) Selling overhead

- Selling overhead consists of expenses in order to maintain and increase the volume of sales.
- Selling overhead covers all expenses direct or indirect which are necessary to persuade consumers to buy.
- Examples of selling overhead :
 - * Advertising.
 - * Salaries and commission of sales managers, travellers and agents.
 - * Rent of sales-rooms and offices.
 - * Consumer service and service after sales, etc.

(d) Distribution Overhead

- Distribution overhead covers all expenses connected with transporting products to customers and storing them when necessary.
- Examples of distribution overhead :
 - * Warehouse charges.
 - * Cost of transporting goods thereto.
 - * Loading and unloading charges.
 - * Upkeep and running of delivery vehicles.
 - * Salaries of clerks and labourers.
 - * Depreciation, etc.

(e) Research and Development Overhead

- Much depends upon the nature of product or service being produced.
- R & D overhead is proportional to the size of R & D department.

27.5. FACTORY COST

Factory cost = Prime cost + Factory overhead
= Direct material cost
+ Direct labour cost
+ (Variable) direct expenses
+ Factory overhead.

27.6. TOTAL COST

Total cost = Factory cost + Selling overhead
+ Distribution overhead
+ Administration overhead.

27.7. SELLING PRICE

Selling price of a product

$$= \text{Total cost} \pm \text{Profit or loss}$$

Fig. 27.1 shows the development of selling price of a product.

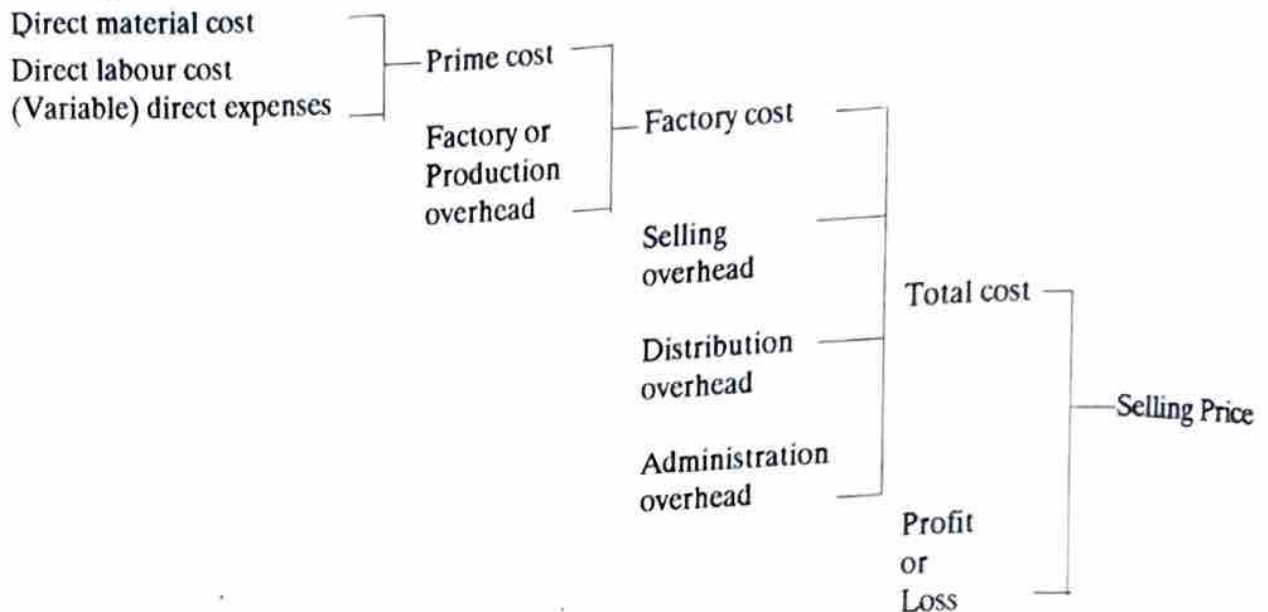


Fig. 27.1. Development of selling price of a product.

27.8. NATURE OF COST

(a) Fixed Costs

- *Fixed costs, policy costs or period costs* are those which tend to remain constant irrespective of the volume of output or sales.
- *Examples of fixed costs :*
 - * Staff salaries.
 - * Administration expenses.
 - * Rent and establishment charges.
 - * Depreciation, etc.

(b) Variable Cost

- *Variable costs* tend to vary directly with the volume of output.
- *Examples of variable costs*
 - * Direct productive labour.
 - * Direct materials.
 - * Direct expenses.

(c) Semivariable Costs

- These costs are partly fixed and partly variable.
- Semivariable costs vary with changes in output but the variation is irregular.
- *Examples of semivariable costs*
 - * Indirect hourly labour which varies more or less with output but not in direct proportion to it, for example, wages of maintenance men.
 - * Grease and oil.
 - * Water and electricity, etc.

- Year 2	$\frac{4}{15} \times 1,50,000$	= Rs. 40,000.
- Year 3	$\frac{3}{15} \times 1,50,000$	= Rs. 30,000.
- Year 4	$\frac{2}{15} \times 1,50,000$	= Rs. 20,000.
- Year 5	$\frac{1}{15} \times 1,50,000$	= Rs. 10,000.

27.14. BREAK-EVEN ANALYSIS

27.14.1. Concept of Break-even Analysis

- Revenue and cost can be studied by directing attention to total revenue¹ and total cost. Break-even analysis implies that at some point in the operations, total revenue equals total cost. Basically, break-even analysis is concerned with finding the point at which revenues and costs agree exactly—hence the term **BREAK-EVEN** (point).
- The break-even point is, therefore, the volume of output at which neither a profit is made nor a loss is incurred (Fig. 27.3).
- The break-even analysis can be carried out *algebraically* or *graphically*.

27.14.2. Importance and Scope of Break-even Analysis

- Break-even analysis helps solving the following types of problems :
 - (a) What volume of sales will be necessary to cover
 - (i) a reasonable return on capital employed;
 - (ii) preference and ordinary dividends; and
 - (iii) reserves.
 - (b) Computing costs and revenues for all possible volumes of output to fix budgeted sales.
 - (c) To find the price of an article to give the desired profit.
 - (d) To determine variable cost per unit.
 - (e) To compare a number of business enterprises by arranging their earnings in order of magnitude.

27.14.3. Calculation of Break-even Point

- The break-even point can be calculated by using the following relation :

$$\text{Break-even point} = \frac{F}{1 - V/P} \quad \dots(14)$$

where F is fixed cost

V is variable cost per unit or total variable costs.

and P is selling price of each unit (or total sales value may be substituted, symbol S).

Example 27.20. The fixed costs for the year 1975-1976 are Rs. 8,00,000. Variable cost per unit is Rs. 40. The estimated sales for the period are valued at Rs. 20,00,000. Each unit sells at Rs. 200.

- (a) Find the break-even point.
- (b) If Rs. 16,00,000 will be the likely sales turnover for the next budget period, calculate the estimated contribution and profit.
- (c) If a profit target of Rs. 6,00,000 has been budgeted, compute the turnover required.

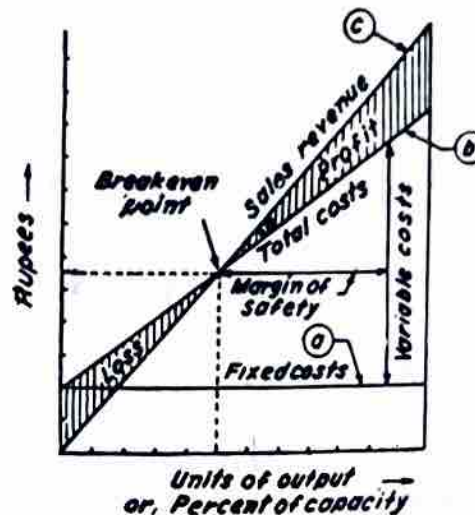
1. Revenue is determined by the demand factors that affect the quantity of products (items) that can be sold at various prices.

Definition

- A *breakeven chart* is a graphical representation of the relationship between *costs* and *revenue* at a given time.
- It is a graphic device to determine the breakeven point and profit potential under varying conditions of output and costs.

Construction

- Fig. 27.3 portrays a Breakeven chart.



θ : Angle of incidence.

Fig. 27.3. A Breakeven chart.

- The breakeven chart consists of an ordinate (y-axis) and an abscissa (x-axis). The ordinate presents a scale of rupees against which fixed costs, variable costs, and rupees of revenue can be measured. The abscissa can be dimensioned in terms of the production volume, i.e., number of units produced.
- Three lines marked as *a*, *b* and *c* can be noticed on the breakeven chart.
- Line '*a*' is a fixed cost function. Fixed charges do not change as a function of increased volume of production.
- Line '*b*' is an increasing linear, monotonic function that increases with increasing volume of production. It represents total costs which result from the summation of fixed and variable costs. The variable costs assigned to the production system are shown by the triangular area between the fixed cost line and total costs line, i.e., '*a*' and line '*b*'.
- Line '*c*' is the sales revenue line. A linear relationship is utilized to describe revenue; which indicates that the price at which any quantity of the output can be sold is fixed and does not change with volume of production.

This line indicates income at varying levels of output or production volume.

Interpretations and analysis of a Breakeven Chart

1. The breakeven point marking no profit no loss situation occurs for a given volume of production.
2. The cross-hatched area between the total cost line and revenue line on the left-hand side of the breakeven point marks loss to the concern whereas the area between the same lines on the right-hand side of the breakeven point represents profit to the enterprise or concern.

3. Profit appears only when more than a minimum volume of output is reached. Profit increases at a faster rate than do total costs.

4. Profit margin as %

$$= 1 - \frac{\text{Variable cost}}{\text{Sales}}$$

Where, sales = Fixed costs + (Variable costs as a % sales) sales.

5. Effect of an increase in fixed costs [Fig. 27.4 (a)]. An increase in fixed costs, possibly owing to the purchase of a new machine, increases the total costs and thus shifts *BEP* (Breakeven Point) towards the right-hand side. This shows that the company's profit position will be impaired if all other conditions remain the same. Therefore, one should study the market conditions carefully before purchasing the new equipments.

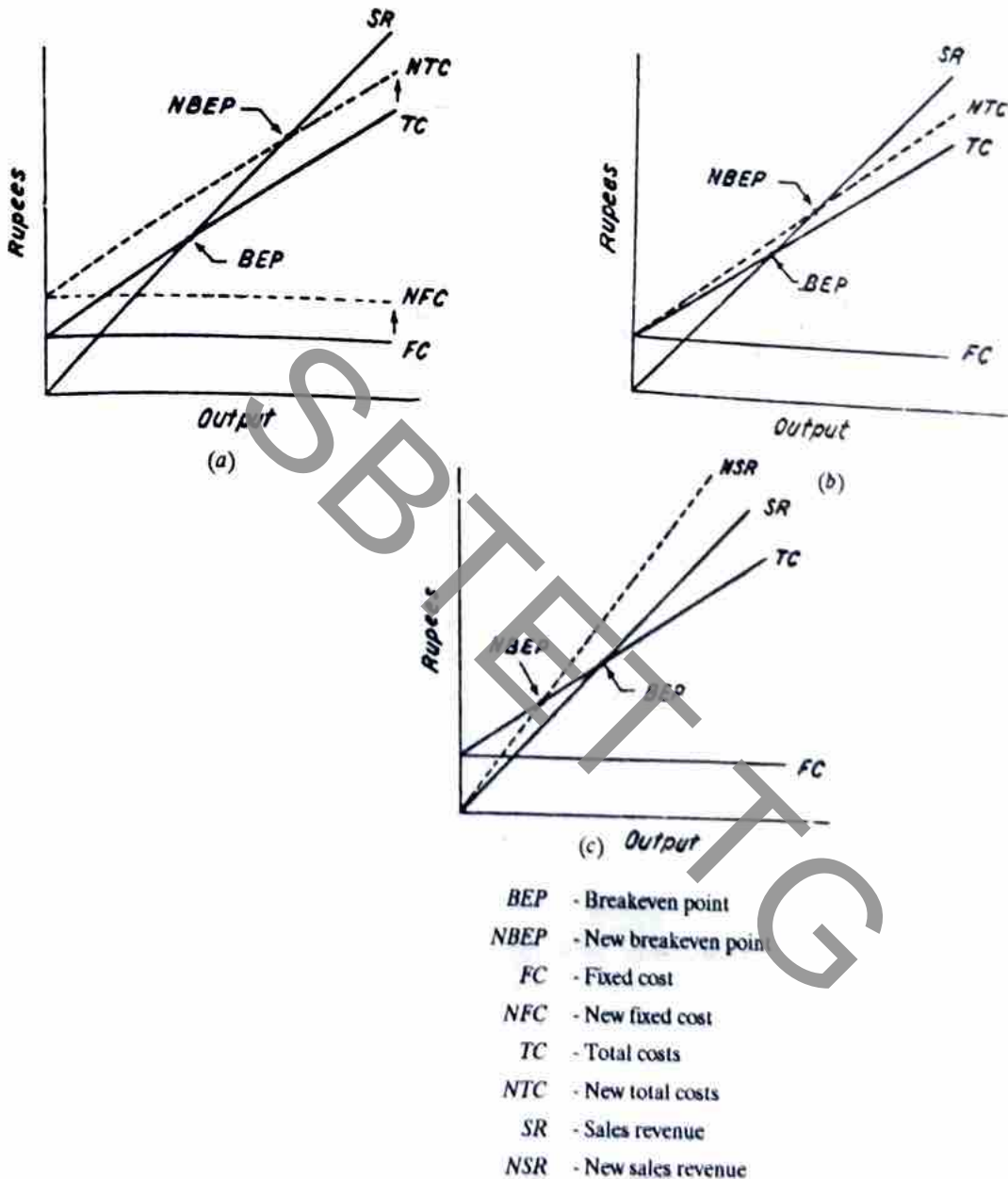


Fig. 27.4. Effect of changing different parameters on breakeven chart.

5. *Effect of an increase in variable cost [Fig. 27.4 (b)].*

- An increase in variable cost and therefore in total costs, possibly owing to an increase in labour cost, would shift the *BEP* towards the right-hand side. This involves a decrease in profit for the same units of output. Therefore the management may think of going for some new labour saving equipment to maintain its profits as before.

7. *Effect of an increase in sales price [Fig. 27.4 (c)].* If the price of an article rises, a new sales revenue will be drawn with a greater slope. This shifts the *BEP* towards the left-hand side and thus increases the company profits for the same volume of output.

8. Effects of a decrease, in fixed cost, variable cost and sales price can be visualised in the same manner as above by drawing separate breakeven charts as in Fig. 27.4.

– *Margin of safety*

(i) Margin of safety can be presented on the breakeven chart as the distance between *BEP* and the output being produced (Fig. 27.3).

(ii) If this distance is large, it indicates that profits will be there even if there is a serious drop in production.

(iii) If this distance is relatively small, it hints that profits will be reduced considerably even if there is a small drop in productive capacity or sales.

(iv) Margin of safety may be expressed in monetary terms or as a percentage — the margin of safety in relation to total sales.

– *Angle of incidence*

(i) This is the angle (θ) at which sales revenue line cuts the total costs line (refer Fig. 27.3).

(ii) A large angle indicates that profits are being made at a high rate.

(iii) A large angle of incidence with a high margin of safety, mark the extremely favourable business position.

Limitations of breakeven chart

1. The breakeven point is difficult to determine in many instances because of the difficulty in properly classifying costs as either fixed or variable and because market conditions may not remain constant over the range of projected capacity.

2. The breakeven chart is a tool for short run analysis; it cannot be used for 8 or 10 year projections because of the difficulty of indicating variables in each of the costs line on the chart.

3. The total cost line, representing the variable costs added to fixed costs, need not be straight line, in actual fact, costs do not usually vary in direct proportion.

4. The straight line which represents sales revenue may also misrepresent the true facts.

5. The breakeven chart represents a static picture whereas business operations are far from static.

6. Analysis of breakeven chart presents additional difficulties. (e.g., in product mix) when a company produces a variety of products.

Example 27.21. The fixed costs for the year 1975-76 are Rs. 80,000. The estimated sales for the period are valued at Rs. 200,000. The variable cost per unit for the single product made is Rs. 4. If each unit sells at Rs. 20, and the number of units involved coincides with the expected volume of output, construct the Breakeven Chart.

(i) Determine the breakeven point.

(ii) Above how many units, the company should produce in order to seek profit.

(iii) Determine the profit earned at a turnover of Rs. 160,000.

Product Design, Planning and Development

5.1. INTRODUCTION TO PRODUCT DESIGN

- It is essential to design a product before starting its manufacture.
- The idea for new or improved products comes from many sources, such as
 - (a) Customer's suggestions and complaints.
 - (b) R & D department.
 - (c) Other competitor products in the market.
- When a new idea has been conceived and then developed to the point at which it shows itself to be both technically and commercially viable, it is considered as how the product should be made.
- Making of a new or modified product will require the services of the following departments of a company.
 - (i) Marketing,
 - (ii) R & D,
 - (iii) Design,
 - (iv) Manufacture,
 - (v) Accounts, and
 - (vi) Personnel.

Marketing gives advice on market trends.

R & D develops new product.

Design department modifies and extends the range of an original idea. The design department consists of designers, engineers and draughtsmen.

Product design deals both with form and function. *Form design* takes care of product's shape and appearance whereas *functional design* deals with its working.

Persons working in design department generally invite representatives from the *manufacturing* and *sales* divisions to view the preliminary design and collect their ideas and comments for further design modification if any.

- Design personnels today make use of *Work Study* (refer Chapter 9) and *Value Engineering* (refer Chapter 12) to systematically question the provisional design.

5.2. EFFECT OF DESIGN ON COST

- Product design decidedly influences the product cost.
- A complicated product design will associate high cost and *vice versa*.
- Product cost is made up of
 - (i) Direct labour cost,
 - (ii) Direct material cost,
 - (iii) Direct expenses, and

(iv) Indirect expenses.

(refer Chapter No. 27).

- Product cost can be reduced if better mutual understanding exists between the design department and the manufacturing division. If they mutually decide to make use of the existing equipment with a little additional tooling etc., it may be possible to reduce cost of the product.
- Product may be redesigned to lower the product cost in order to compete the market; sometimes it may be at the cost of product quality.
- A designer should know the technology of industry so that he can select the best method and the materials whether they are in use in the concern or not.
- Product cost can be reduced by applying the concept of *Value Analysis* (refer Chapter No. 12).
- *Product cost can also be reduced by considering the following aspects at the design stage.*

1. Materials :

- (i) A product should be designed of a material which is Cheaper,
Correct, and
Easily workable and machinable, etc.
 - (ii) A product should be designed with a minimum of material to reduce both machining costs and original material costs.
 - (iii) Alternate cheap materials should be considered. For example, an aluminium alloy may be used for making a casting instead of costly magnesium alloy.
 - (iv) Depending upon the functional requirement a product may be made out of metals or non-metals (i.e., plastics, etc.)
2. A product should be designed out of as many standard (and inter-changeable) parts as possible in order to cut down the product cost.
 3. A product should be designed with parts as fewer as possible. Lesser the number of component parts, lesser is the product cost.
 4. A product should not be given tolerances unnecessary tight ; this will increase rejection and in turn will add to the cost of the product.
 5. Too high a surface finish, simply to add to sale appeal will entail high product cost.
 6. To reduce product cost, some component parts of the product which cannot be economically and easily manufactured in the concern itself should be purchased from outside suppliers (Make or Buy decision).
 7. If feasible, the product may be redesigned to make use of existing equipment and machinery. This will help reducing cost of the product.
 8. The product design should be such that a minimum number of operations (machining, etc.) are required to convert raw material into the finished product. This will decrease product cost.
 9. Design should be simple so that the product can be manufactured without much complications.

5.3. REQUIREMENTS (OR CONSIDERATIONS) OF A GOOD PRODUCT DESIGN

It is not possible to specify exactly what constitutes a good design, but the essential requirements are that it should bring :

- (a) Customer satisfaction, and
 - (b) An adequate profit.
- (a) In order to achieve customer satisfaction,

- The product should function correctly.
- It should possess desired degree of accuracy.
- It should have required standard of reliability.
- Product should be easy to operate e.g., a number of controls may be operated from one position.
- Product design should be such that it is easy to achieve accessibility for servicing.
- Product design should obtain good space utilization.
- Product should be sufficiently rugged to withstand all but exceptionally rough handling.
- Product should have pleasant appearance. Colours play an important role in product design.
- Product should be of reasonable price to compete other products in the consumer market.

(b) Making adequate profit means that

- It should be easy to manufacture the product within the available resources.
- Manufacturing process should be decided on the basis of the product quantity to be manufactured. Small parts on mass scale may be produced by Die casting rather than the sand casting.
- The use of standard component parts wherever possible can lead to great saving.
- A well designed product will consist of minimum number of parts.
- Good product design will call for minimum number of operations.
- Good product design should not extend the through-put time.
- A well designed product should be easy to pack and distribute.

5.4. FACTORS AFFECTING PRODUCT DESIGN

The design of any product involves due attention to the following factors :

- (a) Technical factors
- (b) Industrial design factors.
- (c) Designing for production-economic factors.

(a) Technical Factors

1. Operating conditions

- Kind of workers which will be making use of the product.
- Conditions of noise, vibrations and heat, etc.

2. Performance

- Accuracy.
- Speed, feed, etc.
- Length of time.
- Type of materials used.

3. Maintenance

- How often maintenance and repair will be required.
- Whether planned or breakdown (maintenance) policy will be adopted.

4. Company experience

- Has the product been designed by the company before ?
- Has the company experience or expertise to design the product ?

(b) Industrial Design Factors

1. Function

- Will the product function at minimum cost ?

2. *Appearance*

- Does the product has a pleasing appearance ?
- Does it create esteem ?

3. *Ergonomics*

- Is the product suitable for human use ?
- Does the use of product cause excessive fatigue to the workers ?
- Does the product fulfils the principles of 'Fitting the job to the workers' ?

(c) **Designing for Production--Economic Factors**

1. *Materials*

- Material specifications : Is the cheapest material, consistent with technical design requirements, being used.
- Yield : Is the waste during production being minimized ?
- Content : Is the minimum amount of material being used in making each component part ?

2. *Methods*

- Equipment : For the production quantity required, can the most productive equipment be employed ?
- Layout : Does the product design make best use of factory layout ?
- Labour : Can the product be manufactured with the available (direct and indirect) labour ?
- Tolerance : Does the product design allow the maximum possible tolerance ?
- Tooling : Does the product design permit the use of existing or otherwise simple economical tooling ?
- Overheads involved.

3. *Standards*

- Is design simple ?
- Does it keep (number of) types and varieties of parts to a minimum ?
- Does the design make use of standard parts ?

4. *Finish*

- Finish may include painting, polishing, electroplating, etc.
- Is the right finish being used consistent with cost, endurance and appearance requirements ?

5.5. **DESIGN BY IMITATION**

- New designs come from innovation.
- New conceived ideas are developed and turned into new products. But, this procedure involves a lot of money and risk of failure or unsucces in the consumer market.
- For this reason, the greatest flow of new designs is not from innovation but *by imitation*.
- Design by imitation saves a lot of R & D money and avoids the risk of being unsuccessful; because only those designs are imitated which have proved their success in the market.
- Imitators start late but move faster than the innovators since they can easily get the new product and its design.
- For example, in 1950's, Sperry Rand had the first computer but IBM soon captured the market and is very well known today for its computers.

5.6. **DESIGN SPECIFICATIONS AND DRAWINGS**

A designer communicates his ideas to the manufacturing section through the medium of

drawings and specifications.

Preparation of drawings and specifications is the last step in product design.

5.6.1. Drawings

- Drawings show the exact size and shape of the product, its different parts and subassemblies.
- Rough sketches made during the process of product designing are drafted into exact engineering drawings.
- Drawings show, how the finished parts, subassemblies and the final product look like when completed.
- Drawings are generally made on standard-sized drawing sheets in order to facilitate their storage, filing and reproduction.
- A drawing should be kept as simple as possible and be clearly drawn.
- An ambiguity on a drawing can lead to mistakes.
- An engineering drawing should include the following information.
 - (i) Component part number (for identification) and part description,
 - (ii) Dimensions from a common datum face to facilitate setting and gauging,
 - (iii) Tolerances and limits,
 - (iv) Material details including specification, size and condition,
 - (v) Finish description,
 - (vi) Title block,
 - (vii) Scale and projection, and
 - (viii) Details of any inspection requirements.
- Before releasing drawings to the manufacturing section, they should be checked, approved by the persons concerned and given the date of issue.

5.6.2. Specifications (Bill of Material or Parts List)

- Product design features other than physical dimensions (already shown on the drawings) are described in writing in the form of specifications.
- The specification is regarded as the key manufacturing document.
- Industries producing single-unit articles such as forgings and castings can provide all the relevant information on the drawings, but those industries which make assemblies need a complete parts list to assist in buying, production control and assembly.
- Specifications provide a written statement of requirements. It states the function of the product. A typical specification is shown in Fig. 5.1.

Sheet of sheets		Assembly description		Assembly part No. H 347		
Item No.	Part No.	Description of part	Material specification	Material size	Material condition	Quantity per assembly
1.	H ₁	Body	Al alloy		Permanent mold casting	1
2.	H ₂	Cover	Al alloy		-do-	1

Fig. 5.1. Design specification.

Plant Location, Layout and Line Balancing

4.1. CONCEPT AND FACTORS GOVERNING PLANT LOCATION

A plant is a place, where men, materials, money, equipment, machinery, etc. are brought together for manufacturing products.

The problem of plant location arises when starting a new concern or during the expansion of the existing plant. Plant location means deciding a suitable location, area, place, etc., where the plant or factory will start functioning. Plant location involves two major activities. First, to select a proper geographic region and second, selecting a specific site within the region. Plant location plays a major role in the design of a production system as it determines the cost of

- (a) getting suitable raw material ;
- (b) processing raw material to finished goods ; and
- (c) finished products distribution to customers.

Hardly any location can be ideal or perfect. One has to strike a balance between various *factors affecting plant location*, which are discussed below :

(1) **Nearness to Raw Material.** It will reduce the cost of transporting raw material from the vendor's end to the plant. Especially those plants, which consume raw material in bulk, or raw material is heavy, is cheap but loses a good amount of its weight during processing (trees and saw mills), must be located close to the source of raw material.

(2) **Transport Facilities.** A lot of money is spent both in transporting the raw material and the finished goods. Depending upon the size of raw material and finished goods, a suitable method of transportation like roads, rail, water or air is selected and accordingly the plant location is decided. One point must be kept in mind that cost of transportation should remain fairly small in proportion to the total cost.

(3) **Nearness to Markets.** It reduces the cost of transportation as well as the chances of the finished products getting damaged and spoiled in the way (especially perishable products). Moreover a plant being near to the market can catch a big share of the market and can render quick service to the customers.

(4) **Availability of Labour.** Stable labour force, of right kind, of adequate size (number), and at reasonable rates with its proper attitude towards work are a few factors which govern plant location to a major extent. The purpose of the management is to face less boycotts, strikes or lockouts and to achieve lower labour cost per unit of production.

(5) **Availability of Fuel and Power.** Because of the wide spread use of electric power, in most cases fuel (coal, oil, etc.) has not remained a deciding factor for plant location. Even then steel industries are located near source of fuel (coal) to cut down the fuel transportation costs.

It is of course essential that electric power should remain available continuously, in proper quantity and at reasonable rates.

(6) **Availability of Water.** Water is used for processing, as in paper and chemical industries, and is also required for drinking and sanitary purposes. Depending upon the nature of plant, water should be available in adequate quantity and should be of proper quality (clean and pure). A chemical industry should not be set up at a location which is famous for water shortage.

(7) **Climatic Conditions.** With the developments in the field of heating, ventilating and air-conditioning, climate of the region does not present much problem. Of course, control of climate needs money.

(8) **Financial and Other Aids.** Certain states give aids as loans, feed money, machinery, built up sheds, etc. to attract industrialists.

(9) **Land.** Topography, area, the shape of the site, cost, drainage and other facilities, the probability of floods, earthquakes (from the past history) etc. influence the selection of plant location.

(10) **Community Attitude.** Success of an industry depends very much on the attitude of the local people and whether they want work or not.

(11) Presence of related industries.

(12) Existence of hospitals, marketing centres, schools, banks, post offices, clubs, etc.

(13) Local bye-laws, taxes, building ordinances, etc.

(14) Housing facilities.

(15) Security.

(16) Facilities for expansion.

4.2. LOCATIONAL ECONOMICS

An ideal plant location is one which results in lowest production cost and least distribution cost per unit. These costs are influenced by a number of factors as discussed under section 4.1. The various costs which decide the locational economy are those of

- | | |
|------------------------------|-------------------|
| (a) Land. | (f) Freight |
| (b) Building/Rent. | (i) In-coming. |
| (c) Equipment and machinery. | (ii) Out-going. |
| (d) Labour. | (g) Raw material. |
| (e) Water, power and fuel. | (h) Taxes, etc. |

Besides these costs, community attitude, community facilities and housing facilities are also worth considering.

The economic aspects of locations are considered or an economic survey or economic analysis is carried out to decide as to which of the possible two or more preliminary selected locations, is the overall best location.

The following examples will clarify the procedure.

Example 4.1. Various costs and other considerations have been listed below as regards to locations 1 and 2. It is required to determine the overall best location.

Factors	Location-1 (Rs.)	Location-2 (Rs.)
Cost of		
(a) Land	100,000	90,000
(b) Building	1,200,000	1,300,000
(c) Water	5,000	6,000
(d) Power	15,000	17,000
(e) Labour	140,000	120,000
(f) Freight		
(i) In-coming	120,000	110,000
(ii) Out-going	160,000	150,000
(g) Fuel	40,000	35,000

2. The disturbance - handler role.
3. The resource allocator role.
4. The negotiator role (dealing with various persons and groups of persons)

A-4 PHILOSOPHY OF MANAGEMENT

- Executives (Managers) in a specific firm operate with some type of *philosophy*, regardless of whether they have studied their philosophical heritage.
- Furthermore, they may not consider consciously the broad structure of ideas that influence their decisions, let alone make explicit the elements of this philosophy to others. If they attempt to write down the basic elements, their statements tend to appear vague and general. Even though it may be difficult to verbalize these basic ideas, the attempt to understand the moral issues involved in managerial activities provides a broad framework that gives meaning to day-to-day actions.
- *Philosophies* differ among firms. *One philosophy* might be good for Firm A but not useful to Firm B. In this connection **philosophy of management** refers to those general concepts and integrated attitudes that are fundamental to the cooperation of a social group. These concepts and attitudes evolve into the particular way in which the firm perceives itself.
- Generally, the **philosophy** of a given firm can be learned only through close and continuous association with it. It is uniquely determined for the individual firm and is affected by a group of factors that, together may be called the concept of the firm. The concept of the firm is the total of how the firm got where it is, the place it occupies in the industry, its strengths and weakness, the view points of its managers, and its relationship to social and political institutions.

A-5 FEASIBILITY STUDY

- *Development of a project involves following steps :*

- (1) Feasibility study
- (2) Analysis
- (3) Design
- (4) Programming and testing
- (5) Implementation
- (6) Post implementation support

These are the major sub-divisions of any project and each must be formally acknowledged by the client (or user) before starting out on the development. Authorization will be required at each stage prior to moving on to the next.

- **Feasibility study** is carried out in order to assess the viability of a new project.

A number of difficult questions need to be answered, such as :

- * Is the envisaged system worth developing ?
- * Will the system improve efficiency ?
- * Will the system improve productivity?
- * Will the system facilitate a reduction in staff ?
- * Will the system provide faster, better management information to enable better business decisions to be taken?
- * Will the system ultimately save the enterprise money or make it more profitable?

- What will the system cost to develop and to operate and can it be justified?
 - Will the system be acceptable to the staff using it on a day-to-day basis?
 - How will the system affect the enterprise's organization?
- In any feasibility assessment, these major policy considerations need to be evaluated as early as possible as they may well have an over-riding influence on the shape of proposed new design.
- The importance of conducting a thorough *feasibility study* and beginning the development process in a slow and carefully controlled way is to be emphasized. This point is reiterated here.
- Typically, it is the project leader's responsibility to carry out a feasibility assessment and he will, in consequence, have to live with the results of his work throughout the lifetime of the project.
- It is well worth making sure, therefore, that all interested people and departments have been involved in the feasibility assessment and that some measure of agreement has been reached as to the general direction of the project. All decision-makers need to be kept informed of progress on a regular basis, and the project initiator needs to keep in touch with the feasibility study on a day-to-day basis. The danger of too much involvement, however, needs to be borne in mind.
- The *objective* of the feasibility assessment is to answer the question 'Is it worth spending money on a systems investigation for this project or is it clearly a non-starter?'
- While the overall feasibility assessment will include an *evaluation* of the *technical* and *social acceptability* of the project, it is usual to find that *financial feasibility* far outweighs these other two considerations.
- *Financial feasibility* must not be interpreted simply as the cost in terms of hardware and manpower resources needed to develop the system. These are one-time costs which while clearly playing an important part in the feasibility assessment, are only part of the total cost of the new system. The impact of the final system on the business must be assessed.
- Typical questions that may be asked at this time are :*
- * Will the new system allow more work to be processed without an increase in costs?
 - * Will the client be able to reduce overhead costs and still maintain the same level of output?
 - * Can new product lines be introduced into the system more easily?
 - * Will better management control be available to enable the client to plan the use of the company's resources better than before?
- A good feasibility assessment needs to be able to answer these basic business questions. In short, the *justification* for any new capital outlay must be that it will *increase the profit* of the enterprise, *improve the quality* of service or products which are the business of the enterprise, or *reduce expenditure*. New system developments will therefore be justified by *cost and benefit criteria* that ensure that projects which give the best return, according to the enterprise's policies, are those which are carried out first.
- The assessment of *technical feasibility* is clearly based on preliminary outline systems design ideas relating to what can be accomplished with existing or imminently available technology. At times of rapid technological change, this is clearly a difficult process and it is not unknown for many systems developments to be started with only a hazy idea of the detailed technology that will be used to secure their implementation.

- The assessment of *social feasibility* is assuming greater importance now than earlier. This is due to the inroads that new systems are making on the work practices of end users and the growing realization among employee organizations of the need to negotiate new technology agreements with employers.
- The culmination of the *feasibility study stage* is the production of the *feasibility study report*, which is presented to the client or user. The structure of a *typical report* is shown in Table A-1, together with an outline of the contents. The project leader will secure commitment to the proposal set out in the feasibility study report from the user or the client, and this commitment and the general agreement reached will be documented. Assuming, then, that the project is to go ahead, the feasibility study stage truly concludes with the preparation of the terms of reference for the next stage – investigation and analysis.
- From the project leader's point of view, the *feasibility study* is probably the most difficult to manage as quantitative measures of progress are difficult to establish and to monitor. The data on which conclusions and recommendations are based is often scanty or speculative. The task of identifying and quantifying benefits in terms that senior management can readily understand and accept is difficult. Costing at this stage can only be considered budgetary and there is always the danger that they become embedded in management's minds so that subsequent phases of the project are judged against these early estimates rather than the more accurate costing derived as the project progresses. The project leader should protect himself from such constraints by including suitable caveats in his feasibility report and getting the necessary authorizing signatures.

TABLE A-1 Feasibility Study Report Structure

STRUCTURE

Identification of Report
 Management Summary
 Introduction
 Existing System Outline
 Definition of Management Requirements
 Review of Alternative Solutions
 Proposed Solution
 Development and Implementation
 Back-up Resources
 Action Plan
 Conclusion

CONTENTS

The front page should specify :

- * the project title
- * the project reference number
- * the date of issue
- * the authorizing signatory (ies)
- * the distribution of the report

Management Summary

This should be a concise summary of the major recommendations of the report in no more than six pages so that it can quickly be understood by senior executives. It is usually placed at the beginning of the report. On very large projects it will not be possible to include sufficient detail on six pages and in these cases a separate document may have to be produced.

Introduction

This section should state the *objective* of the report and of the project; it should refer to the terms of reference of the feasibility study and the constraints within which it has been conducted.

Existing System Outline

A succinct and precise *definition* should be given of the existing system using system flowcharts, tables and charts that show:

- * the organization
- * the scope of the system
- * the main procedures
- * the current staffing levels
- * the operating costs of the system
- * performance statistics of the current system, manual or automated
- * a critique of the problems

Definition of Management Requirements

This section should describe the user requirements of a new system, addressing the key areas identified above. Attention should be given particularly to operational deadlines, staffing levels and operating costs.

Review of Alternative Solutions

The major possible alternative solutions should be discussed and compared using clearly defined criteria. If possible, numerical weighting for each criterion should be established, but if this is done it is important to use the results from such weightings as guidelines only and qualitative criteria should be added to the evaluation as well.

Proposed Solution

More detail should be given of the solution which seems to best fit the user's requirements. This should concentrate on the effect on business operations, departmental organization changes, development and running costs and benefits to the user department. Wherever possible, benefits should be quantified and tangible benefits included as well.

Development and Implementation

A broad plan for the development and implementation of the proposed system should be given which identifies major activities, time-scales, resource requirements and costs. However, it must be stressed that this is an initial high level estimate and that facts presented must not be held as binding because subsequent phases of the development will refine them.

Back-up Resources

To give the user department confidence in the new system, it will be necessary to state what procedures will be followed if, for any reason, the new statement is unavailable through failure or breakdown. Alternative computer solutions should be given and,

wherever possible, an ultimate manual standby. The restrictions of such standby facilities should be clearly specified.

Action Plan

This section states in detail the next development steps to be taken assuming that the feasibility report is approved. It should concentrate on the next phase - *investigation and analysis* - but highlight major actions in all phases until completion. These actions should include those which are the responsibility of the user department as well as those of the systems development team.

A-6 PROJECT APPRAISAL

Introduction

Once the stream of costs and benefits of an investment project is defined, the next logical question to ask is: Is the project worthwhile? A wide variety of criteria have been suggested to judge the worthwhileness of investment projects. The important investment *appraisal criteria*, classified into two broad categories—non-discounting criteria and discounting criteria.

Appraisal Criteria

1. Non-Discounting Criteria

- * Urgency
- * Payback Period
- * Accounting Rate of Return
- * Debt Service Coverage Ratio (DSCR)

2. Discounting Criteria

- * Net Present value
- * Benefit Cost Ratio
- * Internal Rate of Return
- * Annual Capital Charge

- As mentioned above there are two broad categories of appraisal criteria: *non discounting criteria and discounting criteria*. The important non-discounting criteria are: urgency, payback period, accounting rate of return, and debt service coverage ratio. The important discounting criteria are: net present value, benefit cost ratio, internal rate of return, and annual capital charge.
- According to the *urgency criterion*, projects which are deemed to be more urgent get priority over projects which are regarded as less urgent. The problem with this criterion is: How can the degree of urgency be determined?
- The *payback period* is the length of time required to recover the initial cash outlay on the project. According to this criterion, a project is acceptable if its payback period is less than a certain specified payback period. Though the payback period has serious shortcomings, it is widely used because it seems to serve as a proxy for certain types of information which are useful in investment decision-making.
- The *accounting rate of return*, also referred to as the average rate of return, is a measure of profitability which relates income to investment, both measured in accounting terms. Since income and investment can be measured variously, there can be a very large number of measures for accounting rate of return. A project is deemed acceptable if its accounting rate of return exceeds a certain cut off rate of return.

Market Structure

UNIT 5



Learning Objectives

After studying the unit, the student will be able to

- ♦ define market structure and explain its significance in different types of markets,
- ♦ discuss the behaviour of firms under different market structures,
- ♦ analyze demand and revenue curves under various market structures
- ♦ illustrate equilibrium in different market structures-using appropriate diagrams and
- ♦ compare the advantages and limitations of each market structure from the perspective of consumers, producers and society.



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5.1 Introduction

In the previous unit we have discussed about production, cost and revenue analyses. The goods produced in an economy are to be exchanged before they are consumed by the people. The activity of selling and purchasing goods and services is known as **exchange**. These transactions of sales and purchases take place in a market. Therefore, market helps to determine the prices of goods and services and facilitates the sales and purchases. In this unit, the meaning of market and classification of markets are explained. It also deals with markets under perfect competition and imperfect competition i.e., monopoly, monopolistic competition, oligopoly and duopoly.

5.2 Meaning of Markets

Market, in general, is understood as a place where goods and services are sold and purchased. It is the nervous system of the economy. In modern times, the concept of market has undergone tremendous changes. Commonly the word 'market' is used to denote places like vegetable market, fruit market, bullion market, share market etc. However, in modern days, a person does not need to go to a market to purchase or sell goods. Now it's possible to sell or purchase a good without going to market due to communication facilities. We can observe that people are conducting the transactions of purchase and sale of goods and services through telephones/

mobile phones and internet facilities from distant places.

According to J.C. Edwards "A market is that mechanism by which buyers and sellers are brought together".

The essential constituents of a market are as follows:

- Market is not related to a particular area. The area is the point of contact between buyers and sellers.
- The contact between buyers and sellers need not the physical presence.
- There should be a commodity which will be sold by the sellers and purchased by the buyers.
- Competition among sellers and buyers is essential in a market.

5.3 Factors Determining Market Structure

The main factors which determine the structure of the market are:

- 1. Number of buyers and sellers:** If the sellers and buyers are in large numbers, a single buyer or seller can't influence the price. If there is a single seller he can exercise great control over the price.
- 2. Nature of the commodity:** If the commodity is homogeneous in nature it is sold at the same price. If it is differentiated (ex. soaps, toothpastes etc) different prices prevail. In the absence of substitutes the seller may charge higher price.

3. Freedom of entry and exist: Price remains stable if there is freedom of entry or exit. Otherwise the firm can influence the price as there is no competition.

4. Knowledge of the market conditions: If buyers and sellers have perfect knowledge about the market conditions there will be uniform price. Otherwise sellers charge different prices.

5. Mobility of goods and factors of production: Mobility ensures uniform price whereas immobility of the goods and factors of production give scope for different prices.

5.4 Classification of Markets

We have understood that market is a place where selling and purchasing of goods or services take place. The classification of markets is based on

three factors. They are: (i) time periods to adjust the supply in the market, (ii) area covered by a commodity and (iii) competition among the producers. The chart-5.1 helps to understand the classification of markets.

5.4.1 Time Based Markets

Supply of a good can be adjusted depending on time factor. On the basis of time, markets are divided into three types i.e., very short period market, short period market and long period market.

a) Market Period or Very Short Period: This is a period where producer cannot make any changes in the production of a good. Hence, the supply is fixed. Supply can be changed by making changes in inputs. Inputs cannot be changed in the very short period. Perishable goods will have this kind of market.

Chart-5.1 : Classification of Markets



b) Short Period: It is a period in which supply can be changed to a little extent. It is possible by changing certain variable inputs like labour.

c) Long Period: The market in which the supply can be changed to meet the increased demand, producer can make changes in all inputs depending upon the demand in the long period. It is possible to make required adjustments in supply in the long period.

5.4.2 Area Based Markets

On the basis of area, markets are classified into local, national and international markets. These markets tell us the size or extent of the market sales for a commodity. The size of the market for a good depends upon demand for the good, transportation facilities and durability of the good etc.

a) Local Market: When a commodity is sold at its produced area is called as local market. Perishable goods like vegetables, flowers, fruits etc. may be produced and marketed in the same area.

b) National Market: When a commodity is demanded and supplied throughout the country it is called national market. Examples are wheat, rice, cotton etc.

c) International Market: When buying and selling of commodities takes place all over the world, then it is called international market. Ex. gold, silver, petrol etc.

5.4.3 Competition Based Markets

Based on the nature of the competition, markets are classified as perfect competition and imperfect competition.

a) Perfect Competition: A perfectly competitive market is one in which the number of buyers and sellers is very large, all engaged in buying and selling a homogeneous product without any artificial restrictions. Hence, there is absence of rivalry among the individual firms in perfect competition.

b) Imperfect Competition: It is a market situation where competition is not perfect either amongst the buyers or amongst the sellers. Hence, there will be different prices for the same product. These markets are divided into monopoly, monopolistic competition, oligopoly and duopoly.

5.5 Perfect Competition : Meaning, Characteristics and Price Determination

5.5.1 Meaning of Perfect Competition

Perfect competition is a market structure characterized by a complete absence of rivalry among the individual firms. Perfect competition in economic theory has a meaning diametrically opposite to the everyday use. Businessmen use the word competition as synonymous to rivalry. In theory, perfect competition implies no rivalry among firms. Perfect competition may be defined as that market situation, in

which there is large number of firms producing homogeneous product, firms are free to enter or leave the industry, buyers and sellers possess perfect knowledge, perfect mobility of goods and factors of production and absence of transportation costs. A firm is a price taker. It cannot influence the price in the market.

5.5.2 Characteristics of Perfect Competition

The following are the main characteristics of perfect competition:

1. Large number of buyers and sellers:

There must be large number of buyers and large number of sellers, so that the behaviour of any seller or any buyer will not influence the quantity of the product or market price. The price of the product is determined by the collective forces of total demand and total supply. The individual seller and the buyer must take price of the product as given. Thus under perfect competition, 'the sellers and buyers are price takers and not price makers'.

2. Homogeneity of the commodities:

In this market, the product of any firm is identical with the products of all other firms. Hence, all the firms in an industry produce perfectly identical or homogeneous products. They are perfect substitutes for one another. The cross elasticity of demand between the products of the firms is infinite. As a result, single price will rule in the market. Hence, the average revenue and

marginal revenue of the firm will be the same.

3. Absence of artificial restrictions:

Sellers are free to sell their goods to any buyers, and the buyers are free to buy the goods from any sellers. The producers, the government or any other agencies will not control the supply, demand and price of the products.

4. Free entry and free exit:

Any firm can enter the industry and it can leave from the industry at any time as per its desire. This helps new firms to enter business when conditions are favourable. It keeps competition at a higher level. As long as a firm earns supernormal or normal profits, it usually stays in competition. But when a firm ends up with losses, it would leave the industry.

Normal Profits and Abnormal Profits

- **Normal profits:** It refers to minimum profits, which are needed to carry out the business. The total production costs of a firm include the normal profits.

- **Abnormal profits:** It refers to excess of earnings over the total production costs. It occurs when the firm's total revenue exceeds total costs (including normal profits).

5. Perfect mobility of factors of production and goods:

Factors of production are free to move from one firm to another one. This is also useful

for free entry and free exit of firms. Factors (land, labour, capital and entrepreneurship) move to the production activities where they get higher incomes. Similarly, perfect mobility exists in the goods and services market. Firm sells its product in the market where it can fetch the highest price.

6. Absence of transport costs: Since there are no transport costs, price of the commodity will be the same throughout the market.

7. Perfect knowledge of the market: It is assumed that perfect knowledge exists for both buyers and sellers about the market. Every buyer or seller knows the price of the product. In the absence of perfect knowledge, it is possible that some buyers may buy the commodity at higher prices when the same product is available at lower price.

8. Absence of selling costs: Selling costs refer to the costs due to advertisement and publicity of the product. As all firms sell the same product there is no need for selling costs. Buyers are supposed to have perfect knowledge about the market conditions.

9. Average revenue (AR) and marginal revenue (MR): AR and MR curves of the firms are perfectly elastic. They are parallel to the 'OX' axis.

5.5.3 Price and Output Determination under Perfect Competition

Under perfect competition, sellers or buyers cannot decide the price. Industry decides the price of the good. Industry is the sum of all the firms.

Market brings about a balance between the commodities that come for sale and those demanded by consumers. It means, the forces of supply and demand determine the price of the good in the industry. The Table - 5.1 and Fig.- 5.1 help us to understand changes in supply and demand and equilibrium price determination.

Table- 5.1: Demand and Supply Schedule

Price (in Rupees)	Quantity Supplied (in KGs)	Quantity Demanded (in KGs)
10	20	60
20	30	50
30	40	40
40	50	30
50	60	20

The above table shows the demand and supply of a good. Changes in price always lead to a change in supply and demand. As price increases, there is a fall in the quantity demanded. It means, price and quantity demanded have an inverse relationship. At the same, if price of a commodity increases there is an increase in the quantity supplied. Therefore, the relation between price

and supply of goods is direct. It can be observed that when the price is Rs.10/-, market demand is 60 kgs and supply is 20 kgs. When the price increases to Rs.20/-, the supply increases to 30 kgs and demand falls to 50 kgs. If the price increases to Rs.50/-, the supply increases to 60 kgs and demand is only 20 kgs. When the price is Rs.30/-, the demand and supply are equal at 40 kgs. This price is called **equilibrium price** which is Rs. 30, and equilibrium supply and demand is 40 kgs. This process is explained with the help of Figure-5.1.

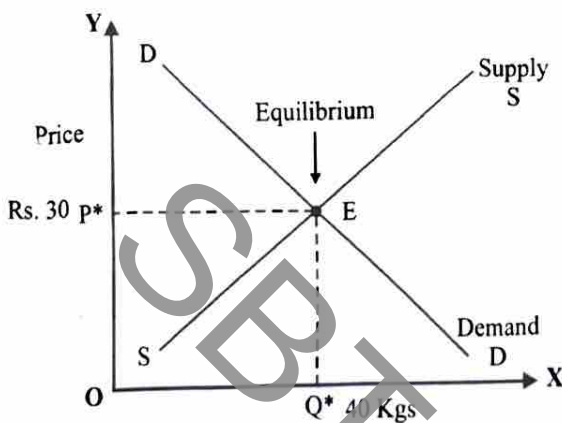


Fig. 5.1 : Price Determination

In Figure-5.1, the demand and supply of a commodity are shown on OX axis and the price of the commodity on OY axis. In this figure, DD is demand curve and SS is supply curve. As per the diagram, the equilibrium price is found at a point where both demand and supply curves intersect each other at point E. So, OP price is the equilibrium price and OQ quantity is the equilibrium supply and demand.

Test yourself

1. In perfect competition, the firm is a
 - a) price maker
 - b) price taker
 - c) price discriminator
 - d) collusive seller
2. The demand curve faced by an individual firm under perfect competition is
 - a) Downward sloping
 - b) Vertical
 - c) Perfectly elastic
 - d) Perfectly inelastic

5.5.4 Equilibrium of the Firm and Industry under Perfect Competition

We learnt that the price of a commodity is determined by the market demand and market supply under perfect competition. An increase in price of a product acts as an incentive to increase production. As a firm aims at maximizing profit, it chooses that output which maximizes its profit. When the firm is in equilibrium, it has no desire to change its output. Equilibrium output is explained with the help of cost and revenue curves of a firm. In perfect competition average cost (AC) and marginal cost (MC) curves are 'U' shaped and average revenue (AR) and marginal revenue (MR) curves are parallel to OX axis. Since $AR = MR$, both these curves will merge into a single line.

1. Short Period Equilibrium

Firms are in business to maximize profits. During short period, a firm cannot change fixed factors like machinery and buildings etc. However, it produces more output by increasing variable factors. Equilibrium output is produced in the short period where short period marginal cost (SMC) is equal to short period marginal revenue (SMR). The firm will be in equilibrium, when the marginal cost curve cuts the marginal revenue curve from below. During short period, a firm may get super normal or normal profits or losses.

Two conditions are necessary for firm's equilibrium. They are: (i) $MC=MR$ and (ii) MC curve should cut MR curve from below.

The firm's short period equilibrium is shown in Figure-5.2.

In Figure-5.2(A), the quantity demanded and supplied in the market is shown on OX axis and price of the commodity on OY axis and in Figure - 5.2(B), the quantity of output is measured on OX axis and the cost and revenue are measured on OY axis. The diagram shows that the equilibrium price OP is determined in the industry at point E where the industry demand is equal to industry supply. The price so determined in the industry is passed on to the firm. This is shown by the horizontal demand curve of the firm. Since competition is perfect, the SAR curve (demand curve) of the firm is also the SMR curve of the firm. The firm's short run average cost (SAC) curve and short run marginal cost (SMC) curve are also shown. The profits of the firm are maximum at the output where $MC=MR$, that is, at output OQ , where $SMC=SMR$.

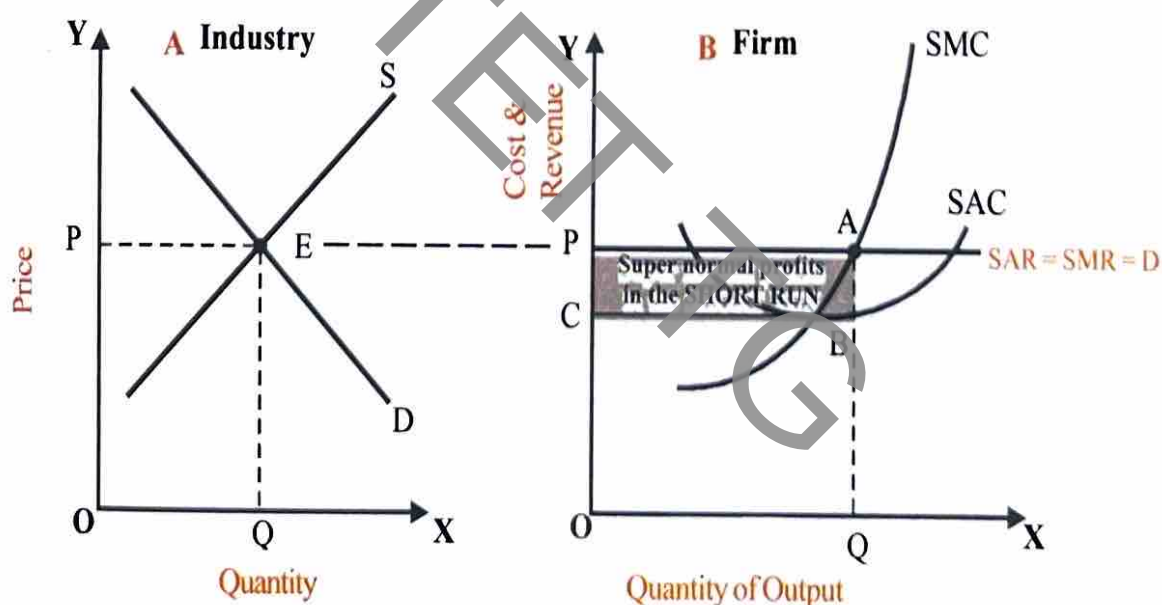


Fig. 5.2 : Perfect Competition - Equilibrium

At any output less than OQ, SMR exceeds SMC, which would mean that if the production is increased its profits will increase. At any output more than OQ, the SMR becomes less than SMC, which would mean a loss to the firm. Thus, OQ is the output of maximum profits. At the equilibrium point 'E', the price is equal to OP or QA, while average cost per unit equals QB. Profit per unit is equal to BA. Total supernormal profits will be equal to PABC i.e. $BA \times OQ$.

2. Long Period Equilibrium

We have seen that under the short period, a firm can adjust its output within the limits of variable factors, by varying the factors of production. But in the long period, the firm can adjust its output to any extent because it can vary all the factors of production. Thus, it is certain that the firm will not incur losses in the long period.

In the long period, the free entry of the new firms into the industry will wipe out the supernormal profits of the firms. Hence, in the long period, the firm will be at optimum level where there is no profit, no loss. Firms get only normal profits which are included in the long period average cost. In other words, under perfect competition, the individual firm at equilibrium earns normal profits only.

Therefore,

Long run Average Revenue = Long run Marginal Revenue = Long run Average Cost = Long run Marginal Cost (or)

$LAR = LMR = LAC = LMC$.

Figure-5.3 illustrates the long period equilibrium of the firm. The quantity of a good is depicted on OX axis and price, cost and revenue are on OY axis.

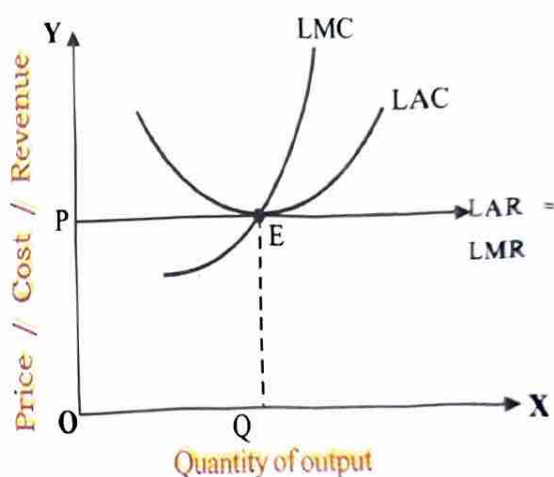


Fig. 5.3 : Long Period Equilibrium of the Firm

The point of equilibrium will be established at which the firm's LMR curve touches its LAC curve at its minimum point (E). At this point $LMC = LAC$. Thus, when a firm is in the long period equilibrium, the following conditions exist:

At point E, $P = LAR = LMR = LMC = LAC$

Case Study -1

In a large vegetable market hundreds of sellers bring identical tomatoes, onions, potatoes and the like for sale. Buyers freely move from shop to shop comparing the prices. All the sellers are aware of the prevailing prices in the market. No seller can increase the price because buyers move to others

offering the same product. Large number of sellers and buyers, free entry and free exit make the market highly competitive. Prices of the goods in the market are uniform and the sellers are to accept them. Prices in this market are determined by total supply and demand and individual sellers have no say in the price determination.

Questions :

1. What is the structure of the vegetable market?
2. How is price determined in this market?
3. What forces determine price?
4. What happens to the seller if he increases the price?

5.6 Imperfect Competition

Perfect competition is practiced only when all ideal conditions exist. But in the real life it is difficult to find perfect competition. Therefore, let us now consider another type of market i.e., imperfect competition. It is a competitive market situation where there are sellers, who sell heterogeneous goods as opposed to the perfect competitive market scenario.

Depending on the size of the sellers in the market, imperfect competition can be classified into 4 types. They are: (i) monopoly, (ii) monopolistic competition, (iii) oligopoly and (iv) duopoly.

5.7 Monopoly : Meaning, Characteristics and Price Determination

5.7.1 Meaning of Monopoly

Monopoly is totally a different kind of market situation compared with perfect competition. The word 'mono' means single and 'poly' means seller. Monopoly is said to exist when one firm is the sole producer of a product which has no close substitutes.

In the words of **Bilas**, "monopoly is represented by a market situation in which there is a single seller of a product for which there are no close substitutes; this single seller is unaffected by and does not affect the prices and outputs of other products sold in the economy". It is an extreme form of market structure.

Reasons for the Emergence of Monopoly:

- a) Licensing / government control:** The government may give license to a producer exclusively to produce a commodity. Sometimes the government may control the production of some goods/ services through the departmental undertakings. Ex. railways, electricity etc.
- b) Patent rights:** Patent rights enable a single producer to produce the goods and where others are not allowed.
- c) Mutual agreements:** Sometimes, different firms agree to work as a single unit in the form of a 'Cartel'.

Ex: 'Organisation of Petroleum Exporting Countries' (OPEC).

d) Control over the resources required in the production enables a firm to become a monopoly.

5.7.2 Features of Monopoly

- A single firm produces the goods in the market. The firm may be owned by a person or a few partners or a joint stock company.
- No close substitutes to this good. So cross elasticity of demand is zero.
- Strong barriers exist for the entry of new firms into the market. There is no threat of entry of other firms.
- Industry and firm is one and the same. A monopolist faces no competition.
- Producer can control price and quantity of the good. But the producer cannot determine both price or quantity of the good simultaneously. He decides one and leaves the other to the market forces.
- The monopolist aims at maximising profits with minimum costs.

The chart - 5.2 : presents the features of monopoly at a glance

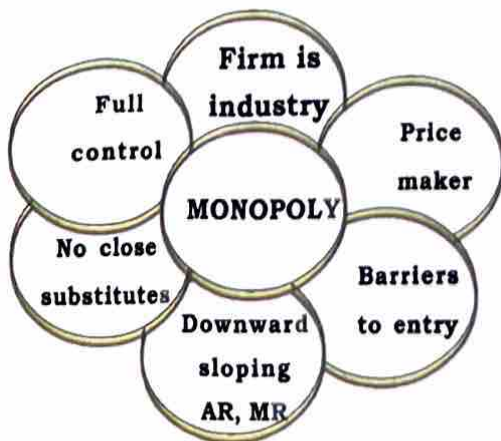


Chart - 5.2 : Features of Monopoly

5.7.3 Price Determination under Monopoly

Price, output and profits under monopoly are determined by the forces of demand and supply of a good. The monopolist will have complete control over the supply of the product. He can also set the price to attain maximum profit. However, he cannot do both the things simultaneously. Either he can fix the price and leave the output to be determined by the consumer demand at this price or he can fix the output to be produced and leave the price to be determined by the consumer demand for his product. The conditions for equilibrium of the firm under monopoly are also similar to perfect competition i.e., (i) $MC=MR$ and (ii) MC curve should cut MR curve from below. Second condition is not applicable always for firm's equilibrium.

Price determination under monopoly is done with the use of AR , MR , AC and MC curves. Figure-5.4 explains the equilibrium position and price determination under monopoly. In the diagram, quantity of output is taken on OX axis and costs and revenues are considered on OY axis.

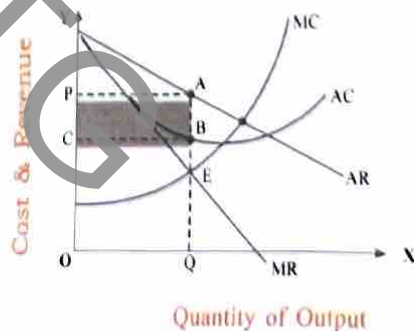


Fig. 5.4 : Price Determination under Monopoly

The monopolist will go on producing additional units of output as long as MR exceeds MC because it is profitable to produce additional unit if it adds more to revenue than to cost. His profits will be maximum and he will attain equilibrium at the level of output at which $MR=MC$. If he stops the level of output at which $MR = MC$, he will be foregoing profits which otherwise he could make. In figure-5.4, $MC=MR$ at output OQ. The firm will be in equilibrium and earning maximum profit. If he increases his output beyond OQ, MR will be less than MC, that is, additional units beyond OQ will add more to the marginal cost than to the marginal revenue. Therefore, the monopolist will be incurring losses.

It will be seen from the AR curve in the figure that equilibrium output OQ can be sold at price QA or OP. Further, it is observed that at the level of output OQ, average cost of production is equal to QB. Equilibrium price is equal to OP or QA, the profit per unit is equal to CP. Profit per unit (CP) multiplied with output (OQ) gives the total profits made by the monopolist being equal to the shaded area PABC.

Case Study - 2

Electricity distribution in a city is handed over to a private limited company by the government. The company is government-licensed with exclusive rights to supply electricity. Licensing rules, huge capital investment and infrastructure requirements make it impossible for new firms to enter the electricity market. The company determines tariff rates based on demand, costs involved in the operation and regulatory requirements. When the consumption levels increase the company raises its output and prices accordingly. The company enjoys significant pricing power since electricity has no close substitutes.

Questions :

1. What is the structure of the above market?
2. What are the entry barriers to the company?
3. What is the relationship between price and quantity demanded?
4. How do entry barriers help the company?

5.4.4 A Comparison between Perfect Competition and Monopoly

A comparison between perfect competition and monopoly is explained in Chart-5.3.

Chart-5.3 : A Comparison between Perfect Competition and Monopoly

Perfect Competition	Monopoly
1. Large number of sellers and large number of buyers.	1. Single seller and many buyers
2. Free entry and free exit of firms.	2. No scope for entry and exit.
3. Homogeneous product.	3. The product may or may not be homogeneous.
4. Perfect substitute goods.	4. No close substitute goods.
5. Difference between industry and firm.	5. Industry and firm are one and the same.
6. Buyers and sellers have to accept the price which is determined by the industry. They are not price makers.	6. Seller can determine either the price or the quantity of output, but not both.
7. Uniform price prevails for the goods as goods are homogeneous.	7. Price varies depending on demand. Price discrimination may take place.
8. Price, AR and MR are the same. This line is parallel to the OX axis. Therefore, $P=AR=MR$.	8. AR and MR curves are different. These curves will have downward slope, therefore $P=AR>MR$.
9. Demand curve is perfectly elastic and parallel to the 'OX' axis.	9. Demand curve is relatively inelastic and sloping downwards.

Test yourself

3. A monopoly market exists when

- a) Many firms produce identical goods
- b) Only one seller controls the entire market
- c) Buyers influence the price
- d) Government fixes price

4. "Few sellers, many buyers" is the characteristic of

- a) Monopoly
- b) Oligopoly
- c) Perfect competition
- d) Duopoly

5. In monopolistic competition, firms compete through

- a) Only price
- b) Only cost
- c) Price as well as non price competition
- d) Government intervention

5.8 Monopolistic Competition : Meaning and Characteristics

5.8.1 Meaning of Monopolistic Competition

So far, we have discussed the determination of price and equilibrium under perfect competition and monopoly. In real world, we rarely find perfect competition and monopoly. In majority of cases, there is neither absolute monopoly/single individual seller nor large number of sellers who control the total supply, and hence, their individual shares are negligible in relation to the total supply of the market. Thus, the real situation is monopolistic competition where there is neither perfect competition nor absolute monopoly. In fact, a blend of perfect competition and monopoly i.e., monopolistic competition exists in the markets.

Edward H. Chamberlin was an American economist best known for developing the Theory of Monopolistic competition. His work greatly influenced microeconomic market structure analysis.



Edward chamberlin
(1899-1967)

E.H. Chamberlin and Joan Robinson pioneered this market analysis.

5.8.2 Characteristics of Monopolistic Competition

According to Chamberlin, the following are the important features of monopolistic competition:

a. Considerable number of firms: The number of firms in this market is large but less than that of perfect competition. The firms may have monopoly power to certain extent. A considerable number of producers participate in production activity. No one producer controls the total output in the market as a result of high competition. Each firm can decide its price-output policy.

b. Product Differentiation: One of the main features of monopolistic competition is product differentiation. This is a market situation, in which there are many firms of a particular product, but the product of each firm is

in some way or the other way differentiated from the product of the other firms in the market. They are heterogeneous rather than homogeneous. Product differentiation may take the form of brand names, trade-marks, size, design, colour, quality, packing, mode of delivery, after sales services etc. It means that the products of the firms will have close substitutes and their cross elasticity of demand will be very high.

c. Freedom of entry and exit of firms:

Though an individual firm possesses monopoly power over its own product, it faces keen competition from other firms making similar products, and therefore it will not have the power to restrict the entry of other firms. In the long run new firms can enter into the industry and some of the existing firms can exit from the industry. New firms enter into industry when there are super normal profits and existing firms may exit from industry when there are sustaining losses in the industry. But the entry is not as easy as in the perfect competition.

d. Competitive advertisements or selling costs:

Product differentiation is also emphasized by the practice of competitive advertising to sell more. Advertising is employed to heighten in the mind of the consumer, the differences between brand A and brand B. Thus, using advertisement costs as

a technique to push up the sales is the important feature of monopolistic competition. Such costs are called **selling costs**. Selling costs and production costs are different. Selling costs constitute a major part of the total costs of the firm.

e. More elastic demand: The demand curve of the firm under monopolistic competition slopes downward from left to right. It is highly elastic but not perfectly elastic as in the case of perfect competition. High elastic demand is due to the fact that products are close substitutes.

f. Firm and industry: Both firm and industry will exist and industry is called 'group'.

g. Independent decisions: Each firm takes its own decisions without considering the reactions of the rivals. It acts like a firm under monopoly.

h. Lack of perfect knowledge: Buyers as well as sellers have no perfect knowledge about the conditions in the market. Consumers prefer a particular brand under the impact of advertisement and sales promotion activities.

i. Non-price competition: Non-price competition is a marketing strategy to boost up sales. A monopolistic firm seeks to imprint the superiority of its product through advertising and sales promotion strategies.

5.9 Oligopoly : Meaning and Characteristics

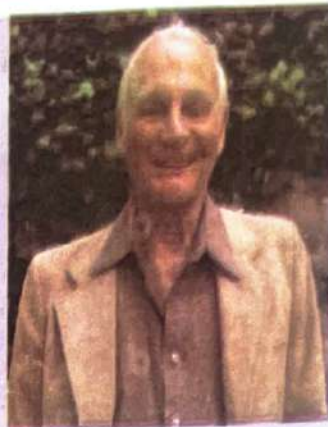
5.9.1 Meaning of Oligopoly

The term 'oligopoly' is derived from Greek words - 'oligos' means a few and 'polein' means to sell. Oligopoly refers to a market situation in which a few sellers deal with a homogeneous or differentiated product. It is also known as competition among the few; each firm has a direct and ascertainable influence upon other firms in the industry. Example: automobile industries, iron and steel industries etc.

E.H. Chamberlin, Hall and Hitch and **Paul M. Sweezy** developed the theories of oligopoly.

Chamberlin's theory of oligopoly states that a stable equilibrium can be reached with the monopoly price being charged by all firms, if firms recognize their interdependence and act to maximize the industry profit. **Paul Sweezy** introduced the *kinked demand curve* analysis which explains the 'stickiness' of prices in the oligopoly in a situation of high rivalry and changing costs. But Sweezy's model does not explain how the price and equilibrium output are determined in the firm. It does not discuss the level of price which will maximize the profits.

Paul Sweezy was an American Marxist economist, political activist, publisher and founding editor of the



Paul Sweezy
(1910-2004)

long-running magazine *Monthly Reviews*. He is best remembered for his contributions to economic theory as one of the leading Marxian economists of the second half of the 20th century. He introduced the concept of kinked demand curve analysis which explains the 'stickiness of prices in the oligopoly.

5.9.2 Characteristics of Oligopoly

The following are the features of the oligopoly :

1. There are very few sellers of the product.
2. There is interdependence among the firms. Each firm considers the possible reactions of the competing firms.
3. Presence of monopoly power and the presence of true competition.
4. Existence of price rigidity. Firms do not prefer to increase or decrease price. They avoid price-war and adopt non-price competition.

5. Excessive expenditure on advertisement.
6. Selling costs in different forms play vital role in extending the demand for the product of a firm; the demand curve of an oligopolistic firm is indeterminate. This is because of the unpredictable actions of the rivals.

5.9.3 Types of Oligopoly

1. Pure Oligopoly: If the firms produce homogeneous products, it is called pure oligopoly. Though it is rare to find pure oligopoly situation, yet, cement, steel, aluminum and chemicals producing industries belong to pure oligopoly.

2. Differentiated Oligopoly: In this type of oligopoly, firms produce products that are similar but not identical which allow them to differentiate their offerings through branding, features or marketing. Ex. passenger cars, cigarettes or soft drinks. The goods produced by different firms have their own distinguishing characteristics, yet all of them are close substitutes of each other.

3. Collusive Oligopoly: The firms cooperating each other in determining price or output or both are called as collusive oligopolies.

4. Non-collusive Oligopoly: If firms in an oligopoly market compete with each other, it is called a non-collusive oligopoly.

Test yourself

6. Kinked demand curve is associated with
- a) Perfect competition
 - b) Monopoly
 - c) Monopolistic competition
 - d) Oligopoly

5.10 Duopoly Meaning and Characteristics

5.10.1 Meaning of Duopoly

Duopoly (from greek words *duo* (two) + *polein* (to sell)) is a specific type of oligopoly where only two producers exist in the market. They have full domination over the market.

It is also called as a limited form of oligopoly. The goods produced by the producers may be homogeneous or differentiated. As there are only two producers, both are aware that the decisions of one will affect the other. Rivalry and collusion of the producers are both possible in this market situation. In the market both firms have noteworthy control. In the field of industrial organization, it is the most commonly studied form of oligopoly due to its simplicity.

The earliest duopoly model was developed in 1838 by the French economist **Augustin Cournot**.

Cournot illustrated his model with the example of two firms. According to this model, the two sellers will have a naive behaviour and they never learn from the past patterns of reaction of rivalry. As a result each firm produces one third of the total output. Together they cover two-thirds of the total market. Each firm maximizes its profits but profits in the industry will not be maximized. This happens due to non-recognition of their interdependence.

AA Cournot was a French economist and mathematician who introduced mathematical analysis into economics. He is best known for the Cournot Model of Duopoly. His work laid the foundation for industrial organization and modern economic theory.



AA Cournot
(1801-1877)

5.10.2 Characteristics of Duopoly

- There will be two independent sellers.
- They produce and sell homogeneous products.
- Cost of production is assumed to be zero.
- Sellers do not recognise their interdependence.

5.11 Summary

- As per traditional view, a market is a place where both buyers and sellers meet together.
- As per modern view, market need not be confined to a particular geographical place. In fact, it is the forces of demand and supply together decide the extent of market.
- Based on time, area and competition, the markets are classified into various types.
- There will be large number of buyers and sellers in the perfect competition. All sellers offer homogeneous goods in the perfect competition.
- Monopoly market is a situation where only one seller produces the good. In the monopoly, firm and industry are one and the same and therefore there will not be any scope for entry and exit of firms from the industry.
- Licensing, government control, patent rights and control of key resources are the reasons behind the emergence of a monopoly firm.
- Charging different prices from different buyers is called 'discriminating monopoly'.
- Monopolistic competition comprises of product differentiation and selling costs.
- Monopolistic competition represents the features of both perfect competition and monopoly. Large number of firms sell differentiated products.

tomatoes or onions. Buyers can freely choose based on price since the quality is nearly the same.

No seller can significantly influence the price alone.

6. Wholesale markets : Wholesale fish or meat markets where vendors sell standardized products at competitive prices. Buyers have multiple choices, and no single seller dominates.

5.16 References

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