

UNIT – 4

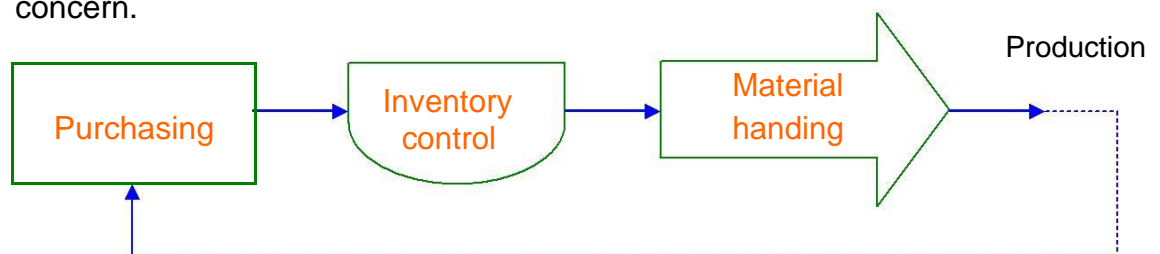
MATERIALS MANAGEMENT

Definition of Materials: Materials refer to inputs into the production process, most of which are embodied in the finished goods being manufactured. It may be raw materials, work-in-progress, finished goods, spare parts and components, operating supplies such as lubricating oil, cleaning materials, and others, required for maintenance and repairs.

Definition on Material Management: Material management deals with controlling and regulating the flow of materials in relation to changes in variables like demand, prices, availability, quality, delivery schedules etc.

Objects of materials management:

1. Minimization of materials cost s
2. To reduce inventory for use in production process and to develop high inventory turnover ratios.
3. To procure materials of desired quality when required, at lowest possible overall cost of the country.
4. To reduce paper work procedure in order to minimize delays in procuring materials.
5. To note changes in market conditions and other factors affecting the concern.



6. The purchase, receive, transport, store materials efficiently
7. To reduce cost, through simplification, standardization, value analysis etc.
8. To conduct studies in new areas e.g., equality consumption and cost of materials so as to minimize cost of production.

Function of Materials Management:

1. Materials planning and programming
2. Purchasing materials inspection of materials
3. Inspection of Materials
4. Classification, codification and standardization in stores
5. Storage of materials
6. Issuing of materials
7. Maintenance of proper inventory records
8. Materials receiving

Inventory: It defined as a comprehensive list of movable items which are required for manufacturing the products and to maintain the plant facilities in working conditions.

Inventory Control: The systematic location, storage and recording of goods in such a way the desired degree of service can be made to the operating shops at minimum ultimate cost.

Objectives of Inventory Control:

1. To support the production departments with materials of the right quality in the right quantity, at the right time and the right price, and from the right supplier
2. To minimize investments in the materials by ensuring economies of storage and ordering costs
3. To avoid accumulation of work in process
4. To ensure economy of costs by processing economic order quantities
5. To maintain adequate inventories at the required sales outlets to meet the market needs promptly, thus avoiding both excessive stocks or shortages at any given time
6. To contribute directly to the overall profitability of the enterprise

Functions of inventory control:

To develop policies, plans and standards essential to achieve the objectives

To build up a logical and workable plan of organization for doing the job satisfactory

To develop procedure and methods that will produce the desired results economically

To provide the necessary physical facilities

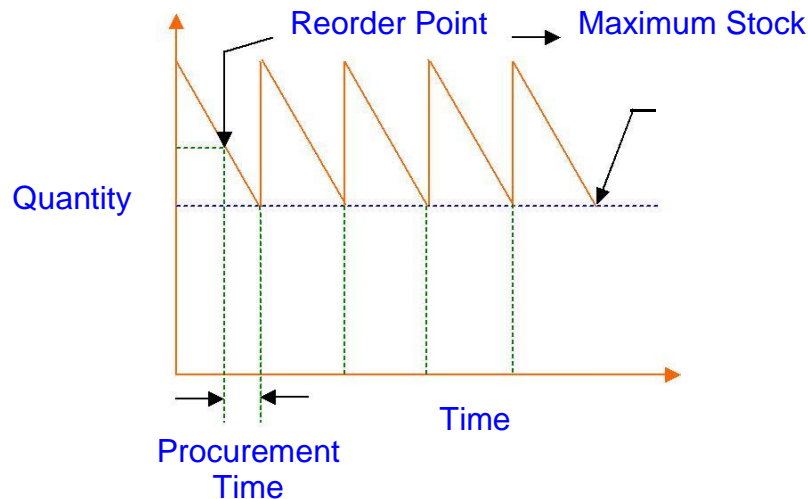
To maintain overall control by checking results and taking corrective actions.

Inventory Management System or Level:

The objects of inventory control is to establish level of inventory which will serve to minimize the company's costs and maximize its revenue.

It is determined by five basic variables

a) Minimum inventory b) Reorder point c) Recorder quantity d) Procurement lead time e) Maximum inventory.



a) Minimum inventory: Minimum inventory or buffer stock is needed to take care of any temporary unpredictable increase in the part usage or in the procurement lead time.

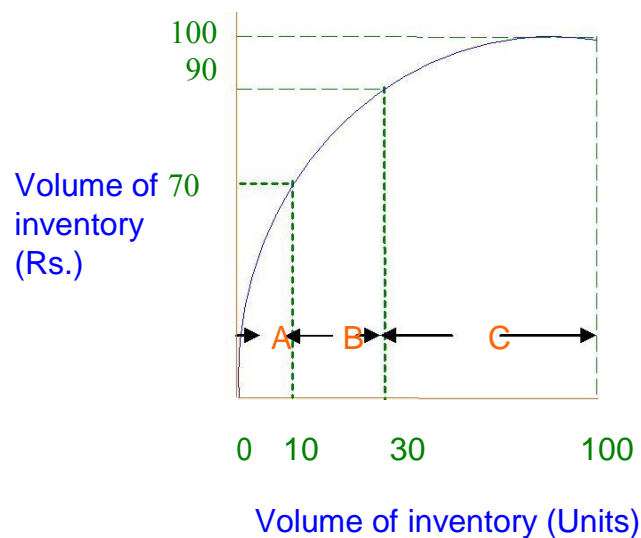
b) Reorder point: It is sufficiently above the minimum inventory to allow for issuing the purchase order and for delivery by a vendor. Reorder point stock level is equal to the minimum stock plus the expected consumption during the procurement lead time.

c) Reorder Quantity: This is the fixed quantity of item for which order is placed every time the stock drops to the reorder point. This quantity is fixed either on the basis of experience or calculated.

d) Procurement lead time: This comprises the time required for preparing the purchase order, the time gap between placing an order and receiving supplies and time required for inspection etc.

e) Maximum inventory: It is approximately the sum of the order quantity and minimum inventory. It will exactly equal the sum of these two quantities if the ordered material is received just when the minimum stock is reached.

ABC Analysis: ABC analysis is a technique of controlling inventories based on their value and quantities. It is more remembered as an analysis for 'Always Better Control' of inventory. Here all items of the inventory are listed in the order of descending values, showing quantity held and their corresponding value. Then, the inventory is divided into three categories A, B and C based on their respective values.



A – Refers to high value item

B – Refers to medium value item

C – Refers to low value item

A category comprises of inventory, which is very costly and valuable. Normally 70% of the funds are tied up in such costly stocks, which would be around 10% of the total volume of stocks. Because the stocks in this category are very costly, these require strict monitoring on a day-to-day basis.

B category comprises of inventory, which is less costly. Twenty percent of the funds are tied up in such stocks and these accounts for over 20% of the volume of stocks. These items require monitoring on a weekly or fortnightly basis.

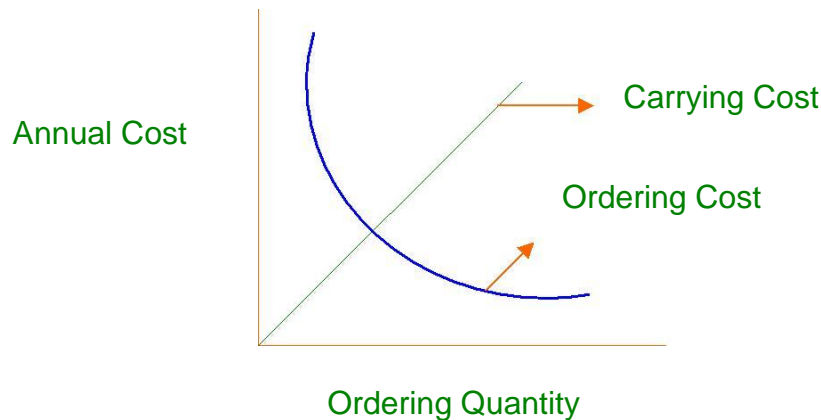
C category consists of such stocks, which are of least cost. Volume-wise, they form 70% of the total stocks but value-wise, they do not cost more than 10% of the investment in the stocks. This category of stocks can be monitored on a monthly or bi-monthly basis.

The following table summarizes the concept of ABC analysis;

Category	Value (%)	Volume (%)	Desired Degree of Control
A	70	10	STRICT
B	20	20	MODERATE
C	10	70	LOW

Economic Order Quantity (EOQ): Economic order quantity is defined that quantity of materials, which can be ordered at one time to minimize the cost of ordering and carrying the stocks. In other words, it refers to size of each order that keeps the total cost low.

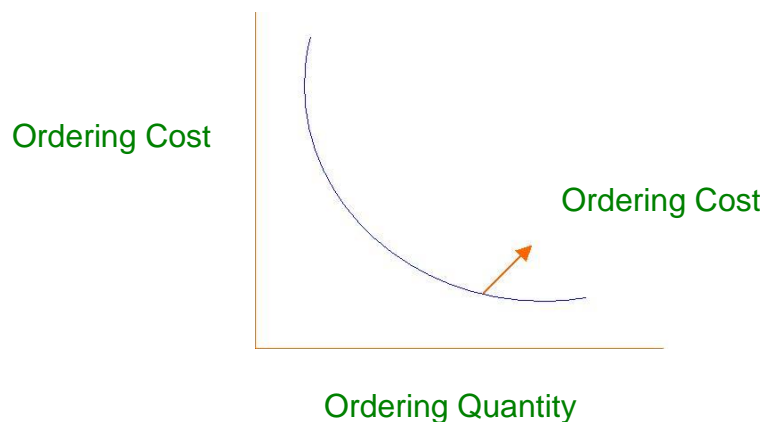
Inventory costs: The inventory costs can be classified into two categories,
1) Inventory ordering cost 2) Inventory carrying cost.



Inventory Ordering Costs (C_o): The cost refer to the cost incurred to procure the materials particularly in large organizations, these cost are significant. This is also called as procurement cost.

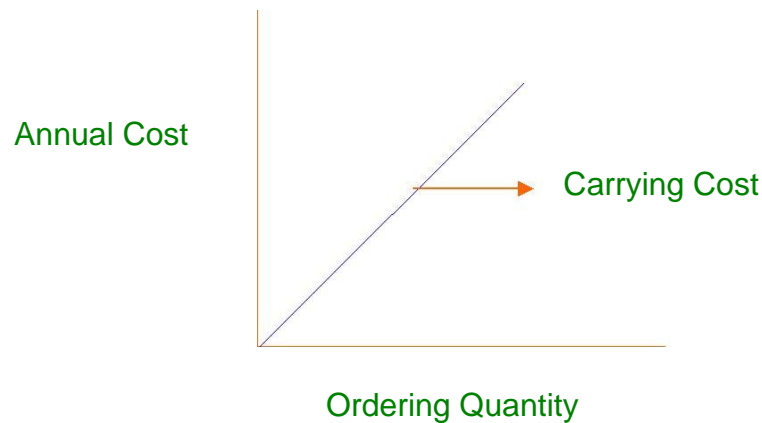
Definition: It is the cost of placing an order from a vendor. This includes all costs incurred from calling for quotation to the point at which the item is taken into stock.

Ex: Receiving quotations, Processing purchase requisition, Receiving materials and then inspecting it , Follow up and expediting purchase order, Processing sellers invoice.



Inventory Carrying cost: Carrying cost which are also known as holding costs are the costs incurred in maintaining the stores in the firm. They are based on average inventory and consist of:

Ex: Storage cost includes: Rent for storage facilities, Salary of person and related storage expenses, Cost of insurance, Cost of capital.



Determine EOQ:

Step1:

Total Ordering cost per year = No. of orders placed per year x ordering cost per

Order

$$= (A/S) \times O$$

A = Annual demand

S = Size of each order (units per order)

O = Ordering cost per order

Step2:

Total Carrying cost per year = Average inventory level x Carrying cost per year

$$= (S/2) \times C$$

A = Annual demand

S = Size of each order (units per order)

C = Carrying cost per unit

Step3:

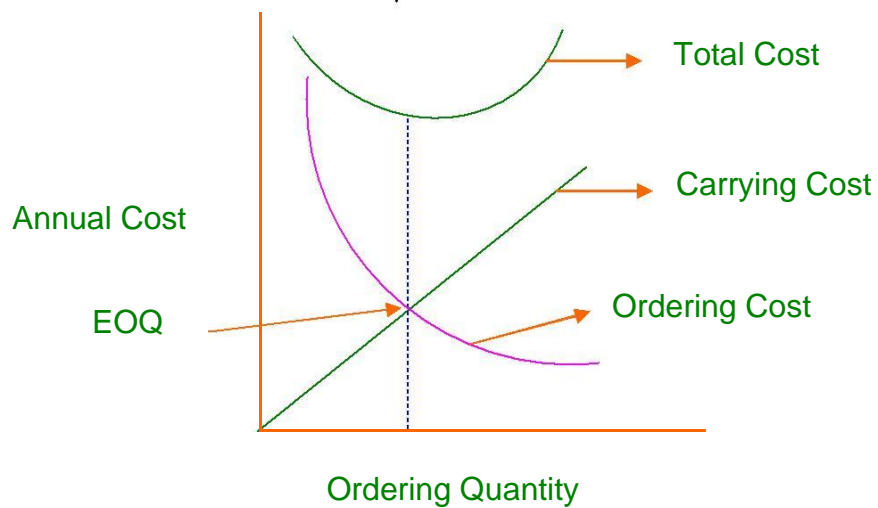
EOQ is one where the total ordering is equal to total carrying cost

$$\frac{A}{S} \cdot O = \frac{S}{2} \cdot C$$

$$2AO = S^2 \cdot C$$

$$S^2 = \frac{2AO}{C}$$

$$S = \sqrt{\frac{2AO}{C}}$$



Where S is the Economic order quantity, A is the annual demand in units, O is the ordering cost per order and C is the carrying cost per unit

Ex: A biscuit manufacturing company buys a lot bags of 10,000 bags wheat per annum. The cost per bag is Rs.500 and ordering cost is Rs.400. The inventory carrying cost is estimated at 10% of the price of the wheat determine EOQ and number of orders required per year.

Solution:

Annual demand (A) = 10,000 bags

Ordering cost per order (O) = Rs.400

Carrying cost per unit (C) = 10% of Cost price

$$= 0.10 \times 500 = \text{Rs.}50/-$$

$$\text{EOQ} = \sqrt{\frac{2AO}{C}}$$

$$= \sqrt{\frac{2 \cdot 10,000 \cdot 400}{50}}$$

$$= \sqrt{1,60,000}$$

$$\text{EOQ} = 400 \text{ bags}$$

The number of orders to be placed during the year = $\frac{\text{ANNUAL DEMAND (UNITS)}}{\text{EOQ}}$

$$\frac{10,000}{400} = 25 \text{ ORDERS}$$

In the above case, the company has to place 25 orders to optimize its ordering and carrying costs.

Method of pricing the materials issued:

It is necessary to value the stocks at the end of the accounting period. These are different methods followed in different industries at different points of time for this purpose. .

The Methods are:

1. First in First out (FIFO)
2. Last in First out (LIFO)
3. Simple average price method
4. Weighted average price method

First in First Out (FIFO) : In this system, the materials first received are issued first materials from the second lot are issued only, when first lot is exhausted and so on. The prices of the materials are charged at the cost at which that lot was purchased.

Last in First out (LIFO): In this system, the materials first received are issued first materials from the second lot are issued only when first lot is exhausted and so on. The prices of the materials are charged at the cost at which that lot was purchased.

Simple average price method: In this method, the stock are issued at an average price. The average price is determined by dividing the sum of the prices (at which the goods are received) by the number of price available.

Weighted average price method: This method is an improvement over simple average price. While calculating the average price, the quantities of each of the receipts are considered. The weighted average price is calculated as given below:

$$\text{Weighted average price} = \frac{(W_1 \cdot P_1) + (W_2 \cdot P_2) + (W_3 \cdot P_3)}{W_1 + W_2 + W_3}$$

Where W_1 , W_2 , and W_3 refer to the quantities of each of the three receipts and P_1 , P_2 , and P_3 are the prices of each of the receipts. Under this method, the quantity of each of the receipts is called the weight. Hence, the average price so computed is called the weighted average price. Weighted average is calculated after each time a purchase is made.

Purchasing: It deals with investment, overheads dealing with other and also result in server losses mass production industries that requires large purchasing for a continues flow of materials, demand for an efficient purchase decision. It implies procurement of raw materials machinery, service etc. needed for production and maintenance of the concern.

It has several benefits in terms of reduced costs, higher inventory turnover, buying the materials at the best prices, turnover, buying the materials at the best prices, continues supplies, reduced lead time and so on.

Objectives:

1. To procure right material
2. To procure materials in desired quantities
3. To procure material of desired quality
4. Purchasing from reliable source
5. To pay less for materials purchased
6. To receive and deliver materials at right place and time.

Purchasing process:

The following are the logical steps in the purchasing process:

1. Requisitioning purchases
2. Exploring sources of supply
3. Issuing of tenders and obtaining quotations
4. Opening of tenders and quotations and preparation of comparative statement
5. Negotiating over the purchase price and terms of supply
6. Placing purchase order
7. Receiving of materials along with the invoice
8. Checking inward invoice
9. Inspecting and testing materials
10. Forwarding the materials to stores
11. Checking invoice and passing of bills for payments

Stores Management: It deals with planning, coordination and control of various activities pertaining or effective efficient and economic storage and store keeping.

Store: Generally, un worked material is known as store

Storage: The store room is the place where stores are housed

Storage: Storage is meant holding in custody all kinds of stores and materials semi-processed and fully processed products.

Store Keeping: It may be defined as that aspect of materials control concerned with physical storage of goods.

Functions of stores:

1. To receive raw materials, semi-finished or purchased items from vendors and to check them for identification.
2. To receive parts and components which has been processed in the factory?
3. To make a record of material receipt and current status of material in the store
4. To maintain positioning of materials in the store.
5. To maintain stock safety and in good condition to ensure that they do not suffer from damage
6. Issuing the items/materials to operational personnel
7. Making a record of receipt and issue slips
8. To avoid illegal attics in store areas.
9. To plan for optimum utilization of space.
10. Cooperating to full extent with purchasing, manufacturing and production planning and control departments.

Stores Records:

Material requisition note: Whenever the materials are required by a department/section, this form has to be filled in. This note provides information about the job number, description of the items required in terms of number. The head of the department/section should authorize it. Whenever the materials are issued, the receiving person should sign the note.

This is to be entered in the materials issued record, which is to be signed by the storekeeper.

Purchase order: The purchasing officer will release the purchase order. The following is the format of a purchase order. Here, we find Vivek enterprises placing a purchase order on Business Solutions Ltd., for the following materials. The terms and conditions of the purchase order such as delivery, payment, and other have to be mentioned clearly.

Invoice: Invoice is a statement sent by the seller to the buyer mentioning the particulars of the goods supplied, net amount payable for the goods, and the

terms and conditions governing the sale. It is very important document because it shows the net amount payable by the buyer after all the discounts and the taxes, if any.

Goods received note: The goods received note furnishes the particulars of the suppliers, purchase order number, purchase requisition number, and the job for which the goods are received. These details are to be certified by a competent authority. On this basis, the accounts department initiates the process of payment for the goods received.

Goods returned note: Sometimes, a part or whole of the goods received may not be of acceptable quality, and hence, these have to be returned to the supplier. In this context, the goods received note is prepared. This is also called the 'debit note' because the suppliers or creditors' account has to be debited by the amount mentioned in this debit note for the goods returned.

Stores ledger account: This is maintained to provide the details of the quantity, price and amount of the receipts, issues, and balance of stocks on a day-to-day basis. At any given time, the physical quantity of stocks should match with the balance as per the stores ledger account. A separate account is maintained for each type of the material in the stores. It should necessarily mention the method such as FIFO or LIFO, followed to value the issues of stocks. It is a valuable tool for the costing department in exercising stores control. It facilitates the valuation of stock from time to time.

Bin card: Bin card is the slip or tag attached to the bin where the goods are stocked. Whenever the materials are received or issued, an entry is made on the bin card. The purpose of bin card is to reveal the particulars of the quantities received, issued, and available as on a given date at a glance. Where separate bins are maintained for each item of the store, each bin will have a tag hung to it.

Marketing Management

Marketing: Marketing as a social process by which individuals and groups obtain what they need and want through creating, offering exchanging products and services of value with others.

Selling versus Marketing:

Selling refers to the act of transferring the ownership of the goods and services from the seller to the buyer.

Marketing refers to the whole process encompassing the entire range of activities starting from identifying the customers requirements to satisfying these in a mutually beneficial manner.

Selling	Marketing
1. Product enjoys the supreme importance	1. Customer enjoys unique importance
2. Emphasis on company (sellers) needs	2. Emphasis on market customers needs
3. Company oriented selling effects	3. Market oriented selling effects
4. Goods are already produced and then sold as profit	4. customers demand determines production supply is adjusted to demand
5. Selling aims at short-term objectives	5. Marketing aims as long-term objectives
6. Top priority is given to sales volume rather than profits increasing sales	6. To priority is given to profitable volume of sales and market share at fair prices and reasonable risk
7. Production oriented	7. Customer oriented.

Marketing Function:

Buying: Buying involves both the marketing and the customers. The marketing manager must know about the type of customers, their consuming habits demands and buying pattern.

Selling: It creates a demand for a product selling function involves.

1. Product planning and development

2. Finding out or locating buyers
3. Demand creation through salesmanship, advertising and sales promotion
4. Negotiation of terms of sales such as price, quantity and quality etc.

Transporting: It involves the creation of place utility. In order to have value goods must first be transported from the place they are produced to the place where they are needed.

Storage: It concerned with storing finished products properly without any damage, until they are dispatched to the customers it is also concerned to the customers it is also concerned with maintaining stock of raw materials with maintaining stock of raw materials, components etc. to meet production schedules.

Standardization and grouping: These two functions are supplementary and complementary to each other. A standard is a measure of fixed value. The standard could be based on colour, weight, quality, and number of items, price, or any other parameter. Both domestic and export markets rely extensively on this function. Grading is the process of sorting the goods. The price varies with the grade of the goods. This function enables the marketer to fix a uniform price for a given grade of the goods. It further promotes good understanding between the buyer and the seller.

Finance: Finance is the life blood of business value of goods is expressed is money and it donated by price to be paid by buyer to seller credit is necessary in marketing it plays all important role in retail trade particularly in the sales of costly consumer goods.

Marketing research: The marketing personnel must study the trends in market demand, supply prices and related market information. The knowledge about the latest market information may help the firm to reduce risk loss in purchasing, in pricing, in forecasting market demand and in facing competition in the market.

Marketing Mix: It refers to the combination of four basic elements, viz., product, price, promotion and the place, known as the four P's of marketing.

Product Mix: It is used to describe the assortment of different product types (product lines) and their varieties (product depth). In addition, different tangible and intangible features of the product also form the product mix.

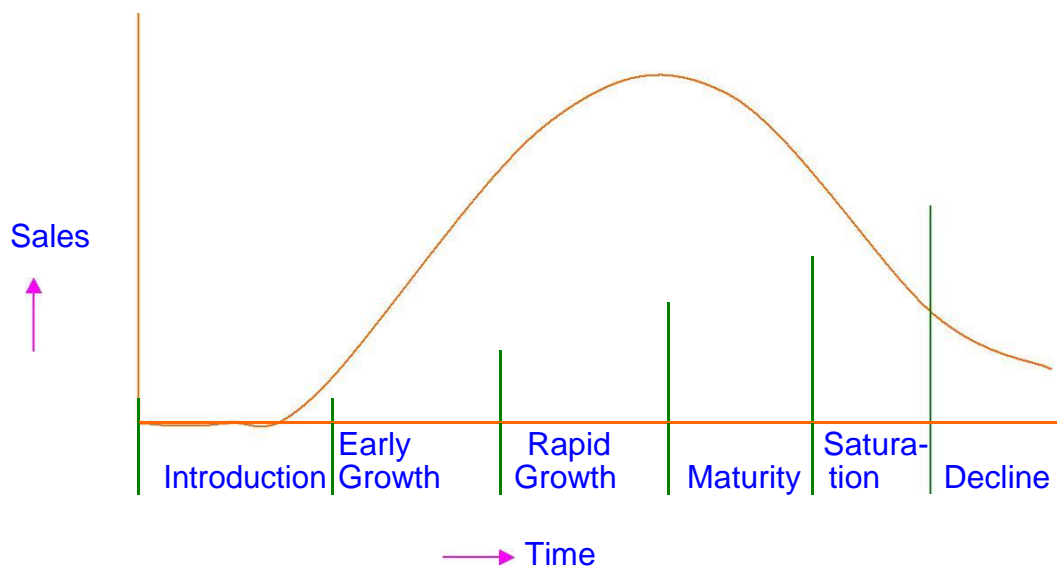
Price Mix: Price mix refers to the decisions relating to the price charged for the product, service or idea.

Promotion Mix: Refers to the activities relating to promotion of the product, service or idea.

Place Mix: Place or physical distribution mix refers to the activities that are involved in transferring ownership to consumers at the right time and price.

Product life cycle:

1. Products have limited life.
2. Products sales pass through distinct stages, each passing different challenges, opportunities and problems to seller.
3. Profits rise and fall at different stages of product life cycle.



Early growth: when the results of usage of product start flowing into the market and the results are encouraging, more and more buyers come forward to try. The sales revenue remains very low till this point of time. This is also a very critical stage, as the manufacturer cannot avail scale economies.

Rapid growth: A new product enters the stage of rapid growth when it satisfies the needs of the customers. The sales start picking up with repeat purchases and by word of mouth publicity, coupled with continued promotion outlay from the manufacturer's side. As new customers get attracted to the product for the first time, sales soar, sales revenues increase faster than costs, and profits start accruing. This trend attracts the attention of the competitors who release a similar product copying the best features of the new product.

Maturity: when the product's sales growth slows down, it is called maturity. Due to this slow down, the industry as a whole suffers from overcapacity. At this stage, firms tend to attract the customers away from their competitors through cheaper prices and larger promotional efforts and outlay. Those who cannot afford such large promotional outlay and woo customers of the competitors.

Saturation: When the sales growth slows down to zero, such a stage is called saturation. This size of the market does not increase beyond this stage. In other words, old customers who have stopped buying the product replace any new customer entering the market. All sales are simply replacement sales or repeat purchases by the same customers.

Decline: When sales of a product tend to fall, such a stage is called decline. When a product ceases to satisfy the customer's needs in relation to those available in the market, it is no more preferred. As a result, its competing products offering superior benefits take over the market. This leads to weakened profitability.

Type of Channels of Distribution: Channels of distribution refer to the ways and means of reaching the customer through the intermediaries such as wholesalers, retailers, and other agencies, if any.

Manufacturer – consumer: This is a direct marketing channel where the manufacturer contacts the customer directly without involving middlemen or intermediaries. The manufacturers of industrial goods such as aeroplanes,

turbo-engines, ships, and other high-value capital goods mostly follow this route.

However, consumer product manufacturers also through Internet, mail order operations, and door-to-door selling are following this method. It is common sight to find the representatives of the manufacturers going from house to house to sell their products, which are normally used in the households.

Manufacturer – wholesaler – consumer: This channel is primarily used in the case of industrial goods and high-value consumer durable products. The wholesaler, who may also be called as distributor in this channel, carries out the functions of retailing to large customers who may in themselves be the manufacturers also. The wholesalers in this channel buy goods from many manufacturers, stock, and subsequently, sell them through internet or directly to the customers in a wider geographical area. An example of the use of this method can be observed in the computer hardware industry.

Manufacturer – retailer – consumer: Here, the large retailing chains, including supermarkets, use this channel to buy products in large quantities from manufacturers at a very competitive price and sell the same to the ultimate consumers. As the retailers enjoy large discounts in this process, they share this benefit with their customers by keeping their products competitively priced. The consumers patronage this channel because they can buy in small quantities from a wide variety at lower prices.

Manufacturer – wholesaler – retailer – consumer: This is a chain widely followed for fast moving consumer goods, which are likely to have mass markets. When the consumers are large in number, widely dispersed geographically, and products are of low value, this channel is favoured. Manufacturers would find it prohibitively expensive to set up their own outlets in such circumstances. For manufacturers of consumer goods such as hosiery, food items, confectionery, clothes, and readymade garments, cosmetics, and so on, intermediaries are indispensable in the distribution chain.