ADITYA ENGINEERING COLLEGE (A)

Managerial Economics and Financial Analysis

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LEARNING OUTCOME

At the end of the This lecture , Student will be able to:

LO 1 :Explain the Managerial Economic concepts for decision making and forward planning

CONTENTS

- Definition of Managerial Economics
- Scope of Managerial Economics and its relationship with other subjects
- Concept of Demand, Types of Demand, Determinants of Demand
- Demand schedule, Demand curve
- Law of Demand and its limitations
- Elasticity of Demand, Types and Measurement
- Demand forecasting and its Methods.

What is Business Economics??

- Also called Managerial Economics,
- Business economics is the **application of economic theory and methodology to solving business problems**

Definitions Of Managerial Economics

- . **Spencer and Siegelman** defined Managerial Economics as " the integration of Economic Theory with Business practice for the purpose of facilitating Decision-Making and Forward Planning by Management".
- **Brigham and Pappas** believe that Managerial Economics is " the application of economic theory and methodology to Business administration practice".

Economics Theory & Methodology

Business Management- Decision problems

Managerial Economics
Application of Economics to solving Business problems

Optimal Solutions to Business Problems

Nature Of Managerial Economics

- It is micro - Economic in nature.
- It uses the subject matter of theory of firm.
- It is realistic in nature (it only deals with business matters).
- It is Normative Economics.
- It is Interdisciplinary
- It is prescriptive rather than descriptive.

Nature Of Managerial Economics

- It is micro Economic in nature.

  Micro Economics is the Study of One unit of firm. Managerial Economics deals with the entire economy as a unit of study.

It uses the subject matter of theory of firm

Managerial Economics largely uses the body of Economics ,concepts and principles which are useful for the firm.

It is realistic in nature.

It avoids the difficult abstract issues of Economic theory. It takes into important element in decision making.

Nature Of Managerial Economics

- It is Normative Economics.

  Managerial economics is Normative science rather than positive.

Ex like Ethics

- It is prescriptive rather than descriptive.

  Managerial Economics Prescriptive rather than descriptive economics.

Scope Of Managerial Economics

- Demand Analysis
- Demand Forecasting.
- Cost Analysis.
- Production and Supply Analysis.
- Pricing Decisions, Policies and Practices.
- Profit Management.
- Capital Management

Scope Of Managerial Economics

- Demand Analysis :

➢ Meaning of Demand:

"Demand in economics means desire to buy backed by adequate purchasing power".

- Demand analysis deals with the analysis of demand factors influence it and the relative responsiveness with respect to change in price.

Scope Of Managerial Economics

Demand Forecasting.

Estimating the demand of existing and new products is the need of every business man. Opinion Survey and statistical methods are useful ways to estimating demand for the product.

Production and Supply Analysis.

Production analysis narrower scope than the cost analysis . Production analysis deals with the different production functions and their managerial uses.

Supply analysis deals with supply schedule curves, and functions ,law of supply and its limitations.

Scope Of Managerial Economics

.Cost Analysis.

Cost analysis deals with different cost classifications ,cost output relationships, economies and diseconomies of scale and cost control and cost reduction

- Pricing Decisions, Policies and Practices.

Price means the exchange value of the product.It deals with different pricing methods and practices in different markets.

Scope Of Managerial Economics

- Profit Management.

Residual income of the business is called profit. Profit management deals with the profit theories ,ways of getting the profit and profit policies breakeven point etc.

- Capital Management
- Capital management deals with selection of the project, rate of return, cost of capital

- Managerial Economics and relation ship with other areas .

Hauge Dc has described managerial Economics as the using of logic of

Economics

mathematics

statistics

Accounting

Operation research

To provide effective ways of thinking about business problems.

- Managerial Economics and relation ship with other areas .

Managerial Economics and Economics:

Business Economists have also found the following main areas of economics as useful in their economics. Demand Theory, Theory of the firm,Business Financing Public finance and Fiscal policy,Money and Banking,National Income and Social accounting,Theory of International trade,Economics of developing Countries.

- Managerial Economics and relation ship with other areas .

Managerial Economics and Mathematics:

Mathematics is yet another important tool –subject closely related to managerial economics. Estimating various economic relationships, predicting relevant economic quantities and using them in decision making and forward planning.

- Managerial Economics and relation ship with other areas .

Managerial Economics and Statistics:

Statistics is important to managerial economics in several ways. managerial economics calls for marshalling of quantative data and reaching useful measures of appropriate relationships in decision making.

Managerial Economics and relation ship with other areas .

Managerial Economics and Accounting:

Accounting information is one of the principal source of data required by managerial economist for his decision purpose.

- Managerial Economics and relation ship with other areas .

Managerial Economics and Operation Research:

The significant relation ship between managerial economics and operation research can be highlighted with reference to certain problems of Managerial Economics which are solved with the help of operation research techniques. the problems are allocation problems, competitive problems, inventory problems.

- Demand:

- An economic principle that describes A consumer's desire and willingness to pay a price for a specific good or service. Three elements of demand.
- 1. Desire to acquire a commodity.
- 2. Willingness to pay price for it.
- 3. Ability to pay for it.

Types of Demand:

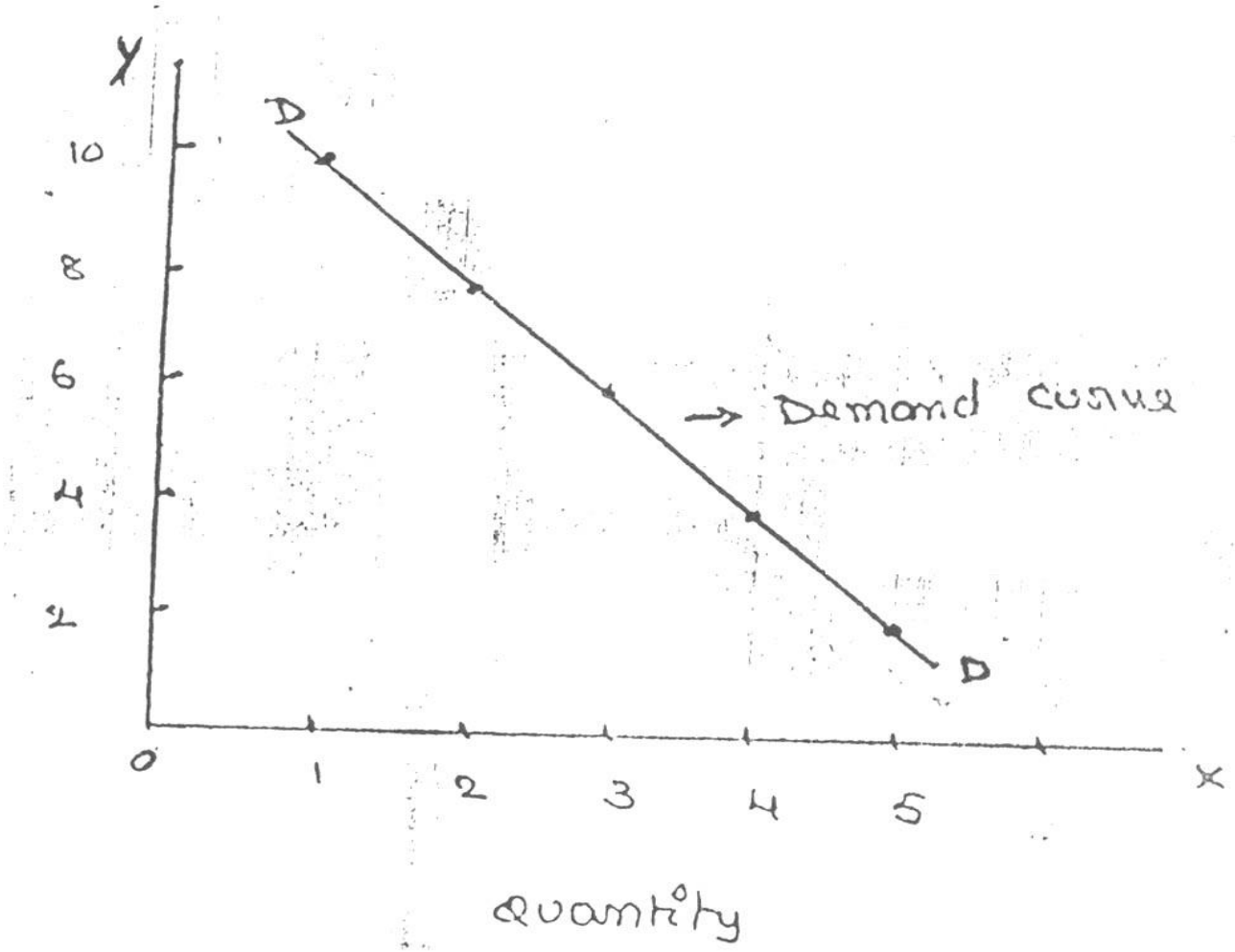
I. Consumer Goods vs Producer Goods.
II. Autonomous Demand vs Derived Demand.
III. Durable vs Perishable Goods.
IV. Firm Demand vs Industry Demand.
V. Short –run Demand vs Long – run Demand.
VI. New Demand vs Replacement Demand.

LAW OF DEMAND

"A RISE IN THE PRICE OF A COMMODITY OR SERVICE IS FOLLOWED BY A REDUCTION IN THE QUANTITY DEMANDED & FALL IN THE PRICE IS FOLLOWED BY A EXTENSION IN QUANTITY DEMANDED, WITH OTHER CONDITIONS REMAINING THE SAME."

- Demand Schedule.

Price of Appel (In. Rs.)	Quantity Demanded
10	1
8	2
6	3
4	4
2	5


Y
10
8
6
4
2
D
D
Demand curve
0
1
2
3
4
5
X
quantity

- According to the law of demand there exists a opposite relationship between the PRICE and the QUANTITY DEMANDED, and that is why demand curve is downward sloping.

Demand Function:

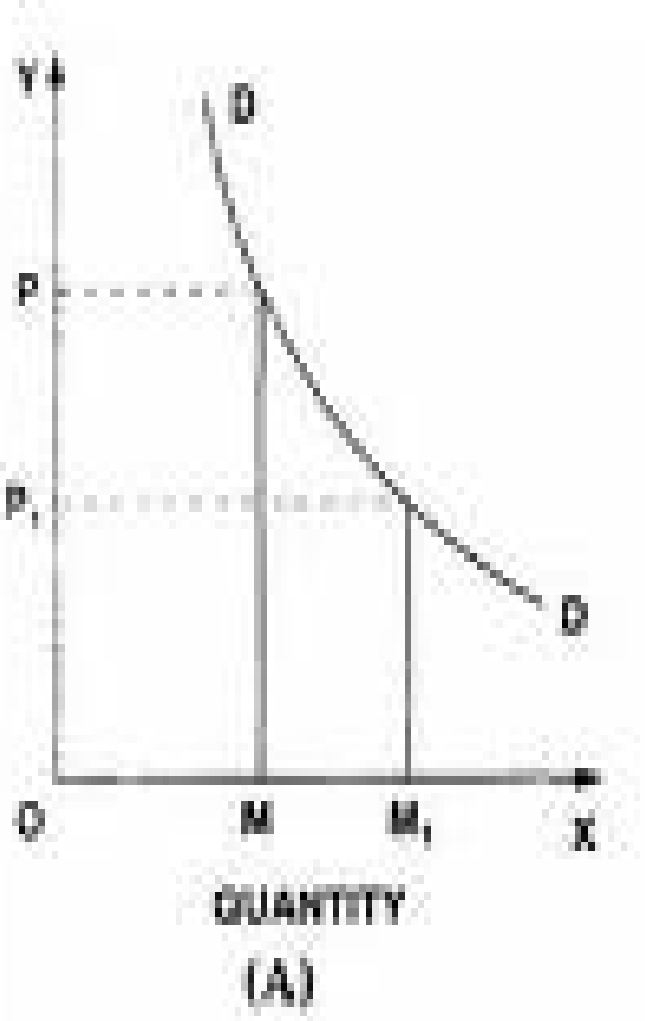
$$Qd = f(P, I, T, Pr, Ep, Ei, Dc, S, A, O)$$

- P=Price of the Commodity
- I= Income Level of th consumer
- T = Taste of the consumer
- Pr=Prices of related goods which may be substitutes or complimentary
- Ep = Expected future price

- Ei = Expected future income
- Dc= Distribution of consumers.
- S=Size of Population
- A = Advertisement efforts
- O = Other determinants not covered in the list of determinants.

Demand Curve :

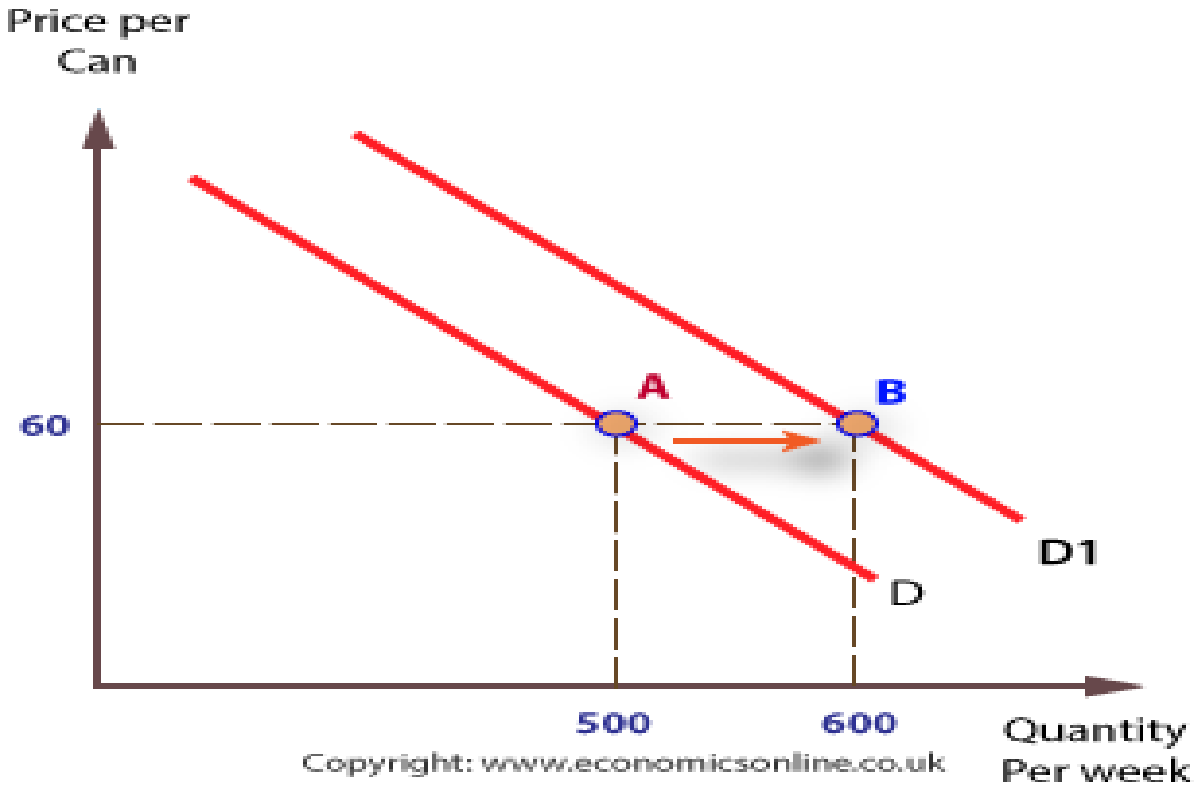
The law of demand is also portrayed graphically in the form of a chart which is called as ‘ Demand curve’.



(A)

Change in demand

- Increase in Demand: When more unit are demanded at the same price or the same quantity is demanded at a higher price It is increase in demand.with an increase in demand the demand curve gets shifted upwards or to the right.
- Decrease in Demand: The Decrease in demand means that less unit of the commodity are demanded at the same price or the same quantity is demand at a lower price. When the demand curve increases the demand curve shifted.


Price per
Can
60
A
B
D1
D
500
600
Quantity
Per week
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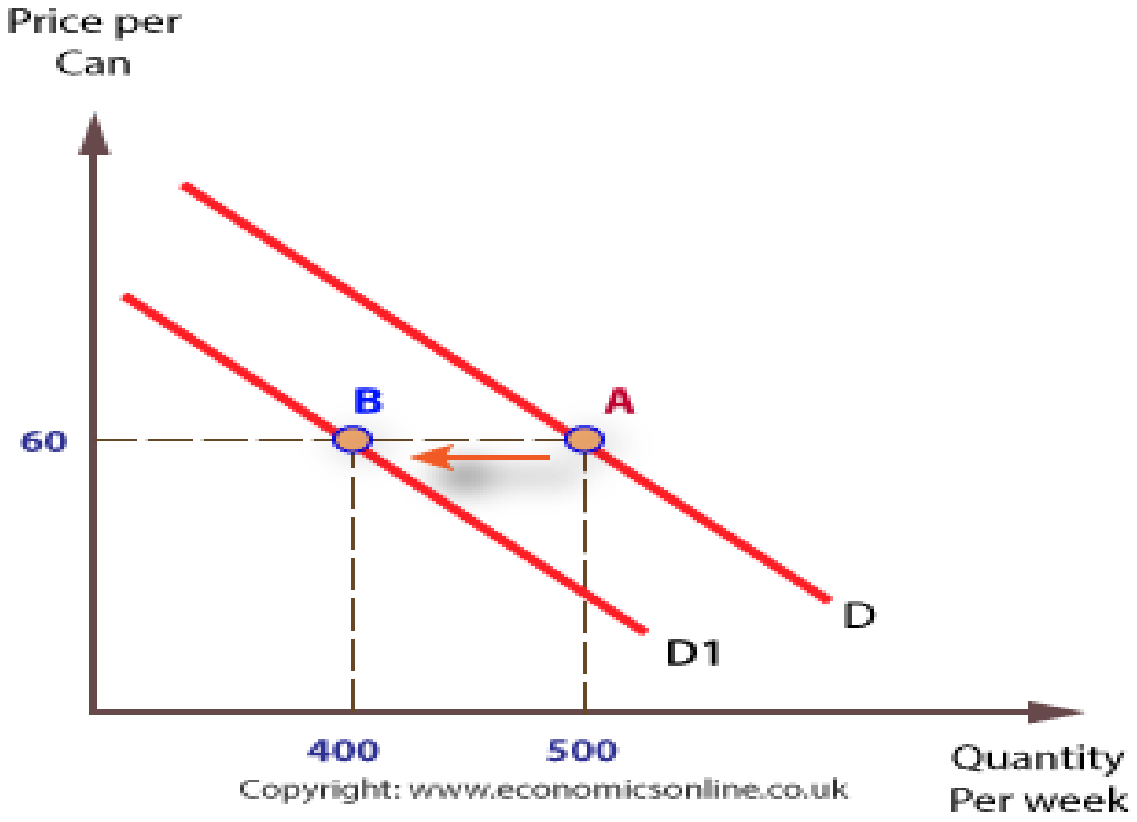
Price per
Can
60
B
A
D
D1
400
500
Quantity
Per week
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- Extension in Demand It refers to a situation where more units are demanded at a lower price. When the price falls the Demand increases

- Contraction in Demand It means less units of the commodity are demanded at a higher price. It means with the rise in the price of the commodity then less is demand.

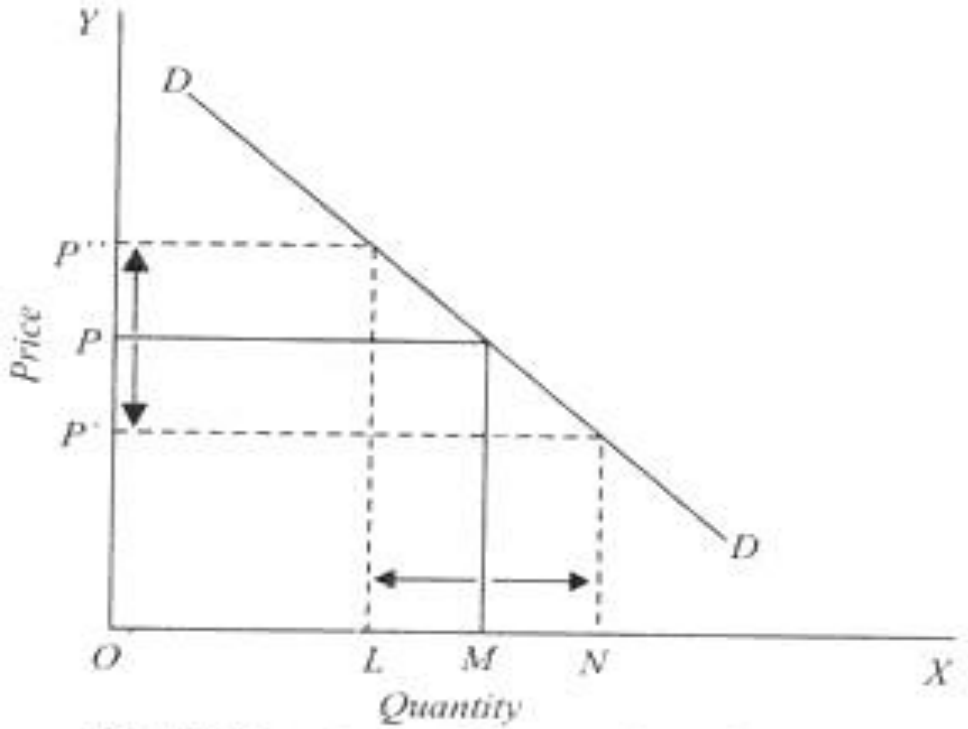
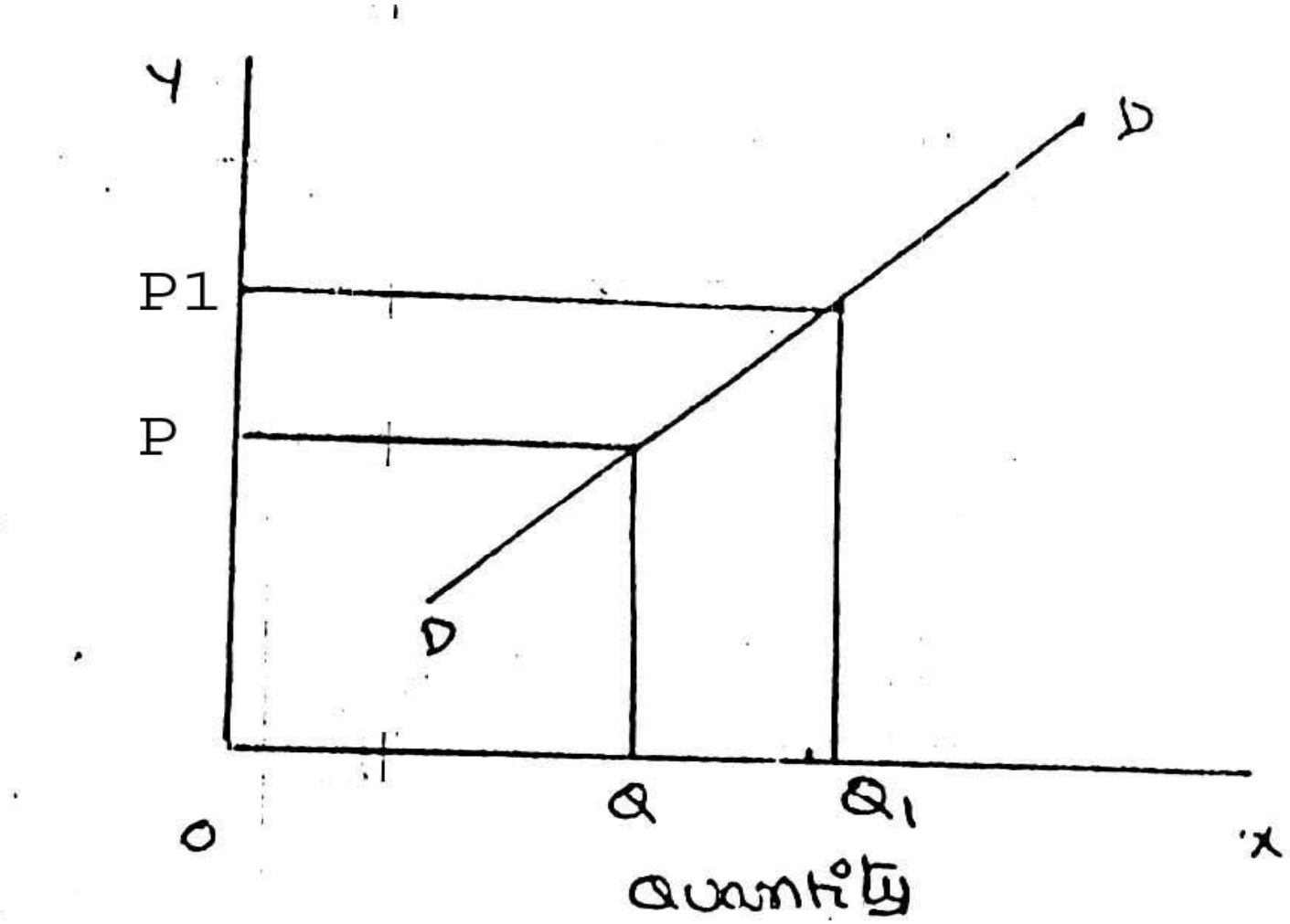


Fig. 7.3. *Extension and Contraction in Demand*

Exceptions of law of demand

- Status symbol commodity
- Fear of storage
- Ignorance
- Speculation
- Giffin goods


Y
D
P1
P
D
O
Q
Q1
X
quantity

- Demand
- Types of demand
- Law of demand
- Demand function
- Factors affecting increase & decrease in demand
- Change in demand
- Extension and contraction of Demand
- Exceptions of Law of Demand

- ELASTICITY OF DEMAND:

Elasticity of demand explains the relationship between a change in price and consequent change in amount demanded. “Marshall” introduced the concept of elasticity of demand. Elasticity of demand shows the extent of change in quantity demanded to a change in price.

In the words of “Marshall”, “The elasticity of demand in a market is great or small according as the amount demanded increases much or little for a given fall in the price and diminishes much or little for a given rise in Price”

➢What is Elasticity ?

It is defined as the rate of responsiveness in demand for a commodity for a given change in price or any other determinants of demand.

$$e = \frac{\text{proportionate change in Quantity Demanded}}{\text{proportionate change in price or Demand Determinants}}$$

- Elastic demand: A small change in price may lead to a great change in quantity demanded. In this case, demand is elastic.

- In-elastic demand: If a big change in price is followed by a small change in demanded then the demand in “inelastic”.

- Types of Elasticity of Demand:

There are four types of elasticity of demand:

- 1.Price elasticity of demand
- 2.Income elasticity of demand
- 3.Cross elasticity of demand
- 4.Advertising Elasticity of Demand

- 1. Price elasticity of demand:

Marshall was the first economist to define price elasticity of demand. Price elasticity of demand measures changes in quantity demand to a change in Price. It is the ratio of percentage change in quantity demanded to a percentage change in price.

$$\text{Price elasticity} = \frac{\text{Proportionate change in the quantity demand of commodity}}{\text{Proportionate change in the price of commodity}}$$

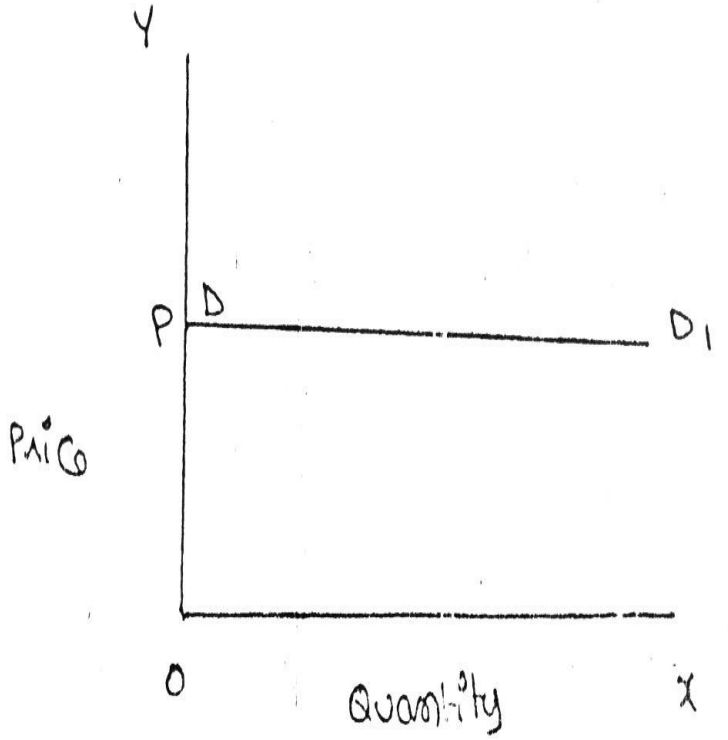
$$ep = \frac{(Q2 - Q1)/Q1}{(P2 - P1)/P1}$$

- There are five types of price elasticity of demand:

A. Perfectly elastic demand:

When small change in price leads to an infinitely large change is quantity demand, it is called perfectly or infinitely elastic demand. In this case E=∞

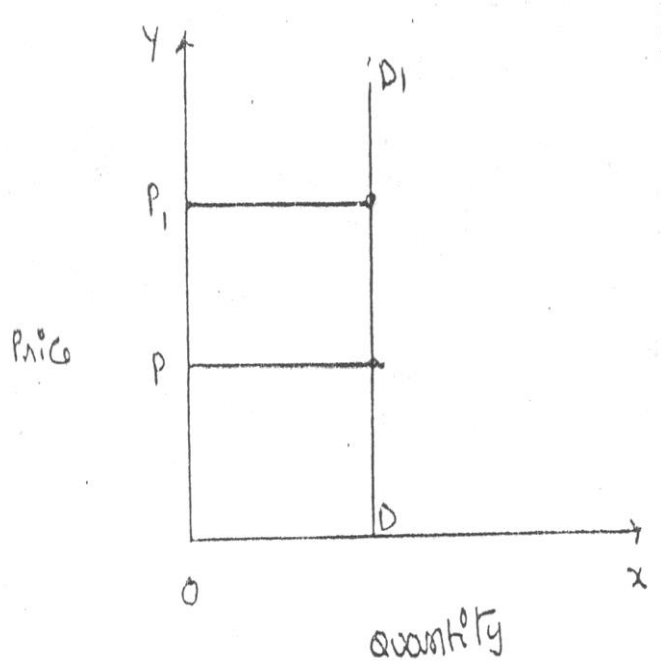
The demand curve DD1 is horizontal straight line. It shows the at “OP” price any amount is demand and if price increases, the consumer will not purchase the commodity.



- B. Perfectly Inelastic Demand :

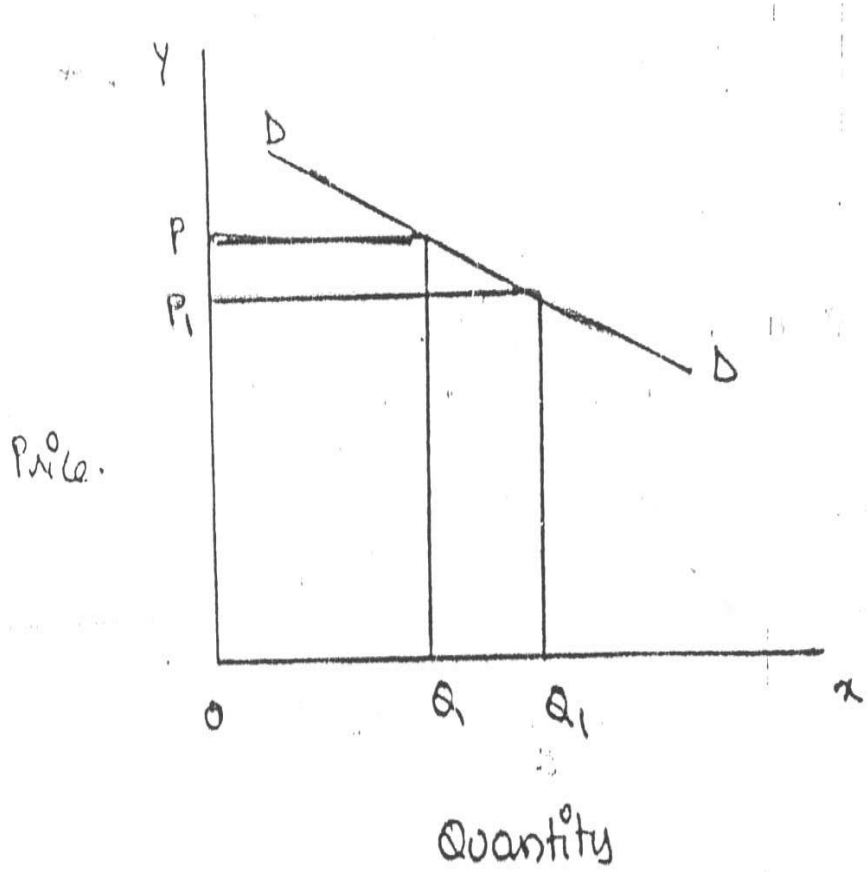
- In this case, even a large change in price fails to bring about a change in quantity demanded.

- When price increases from ‘OP’ to ‘OP1’, the quantity demanded remains the same. In other words the response of demand to a change in Price is nil. In this case ‘E’=0.



- C. Relatively elastic demand:

- Demand changes more than proportionately to a change in price. i.e. a small change in price loads to a very big change in the quantity demanded.
- In this case E > 1. This demand curve will be flatter.

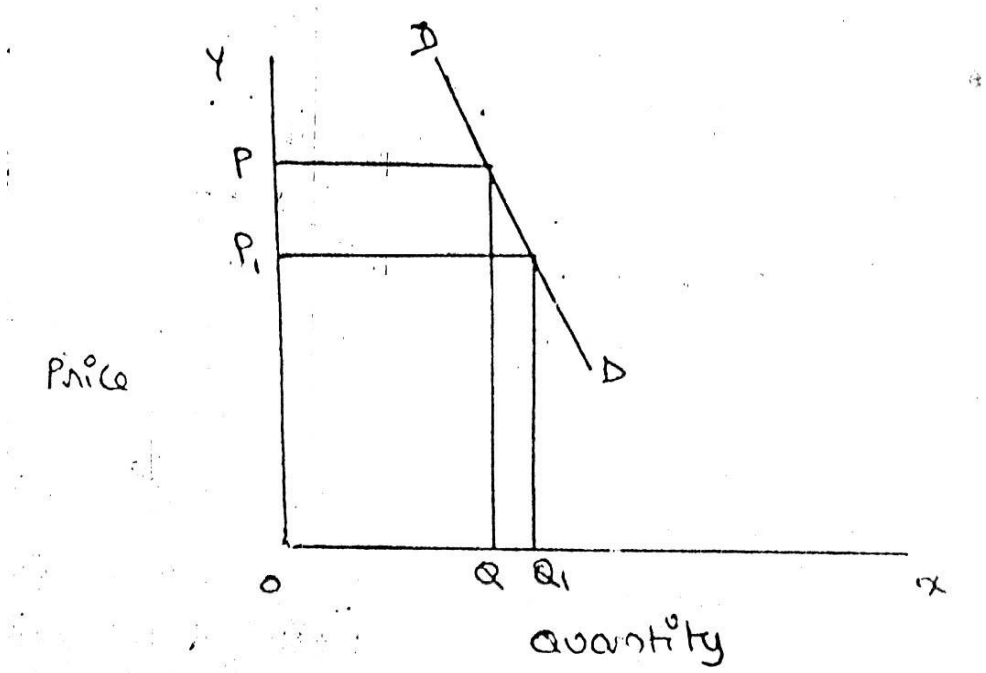


When price falls from ‘OP’ to ‘OP1’, amount demanded in crease from “OQ’ to “OQ1’ which is larger than the change in price.

- D. Relatively in-elastic demand:

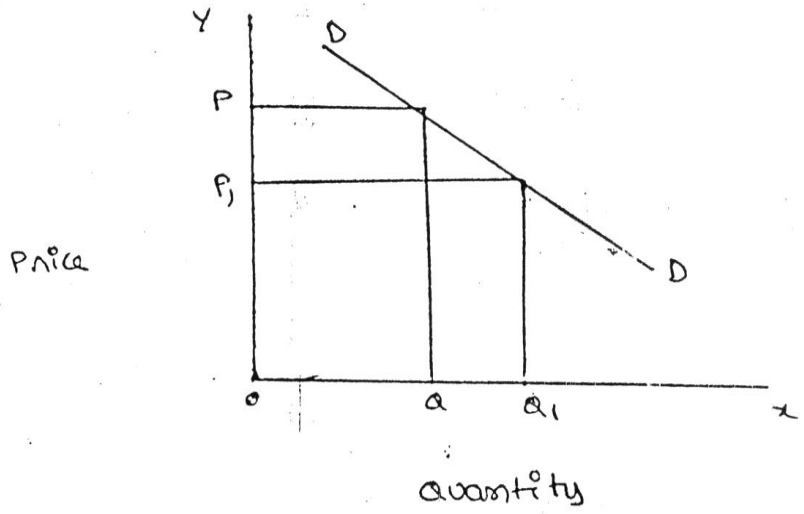
Quantity demanded changes less than proportional to a change in price. A large change in price leads to small change in amount demanded. Here E < 1. Demanded carve will be steeper.

When price falls from “OP’ to ‘OP1 amount demanded increases from OQ to OQ1, which is smaller than the change in price.



- E. Unit elasticity of demand:

The change in demand is exactly equal to the change in price. When both are equal E=1 and elasticity if said to be unitary



When price falls from ‘OP’ to ‘OP1’ quantity demanded increases from ‘OQ’ to ‘OQ1’. Thus a change in price has resulted in an equal change in quantity demanded so price elasticity of demand is equal to unity.

2.Income Elasticity of Demand :

It refers to the quantity demanded of a commodity in response to a given change in income of the consumer. It is normally +ve.

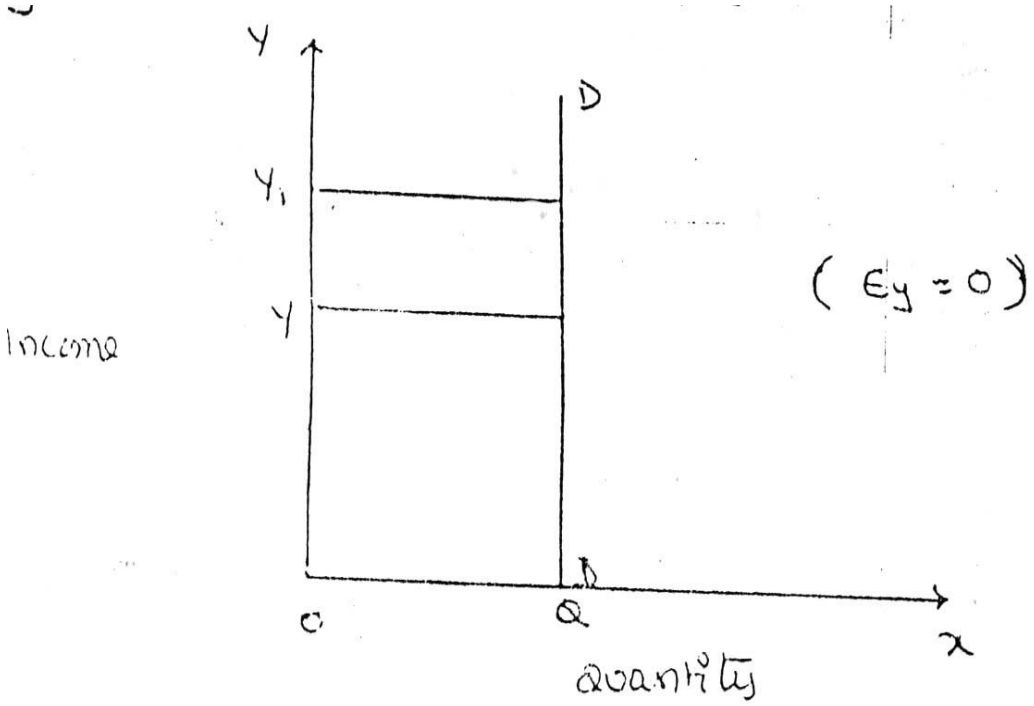
$$\text{Income Elasticity} = \frac{\text{Proportionate change in the quantity demand of commodity}}{\text{Proportionate change in the income of the people}}$$

Income elasticity of demand can be classified in to three types.

- A. Zero Income elasticity.
- B. Negative Income elasticity.
- C. Positive Income elasticity.

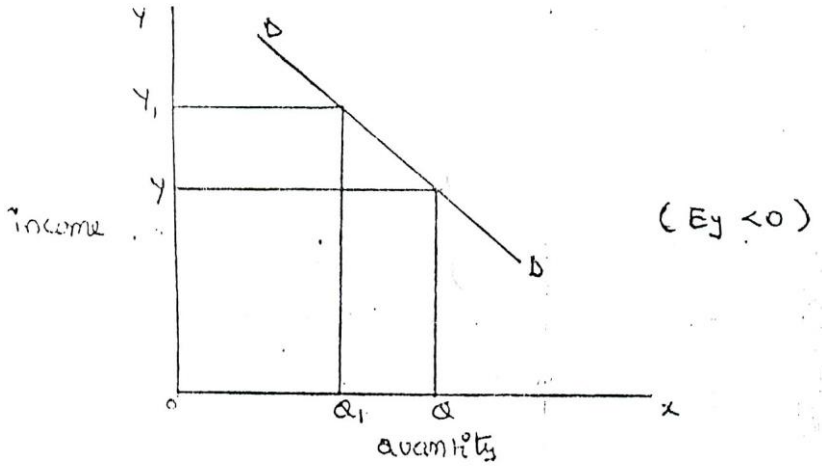
- A. Zero income elasticity:

- Quantity demanded remains the same, even though money income increases. Symbolically, it can be expressed as Ey=0. It can be depicted in the following way:

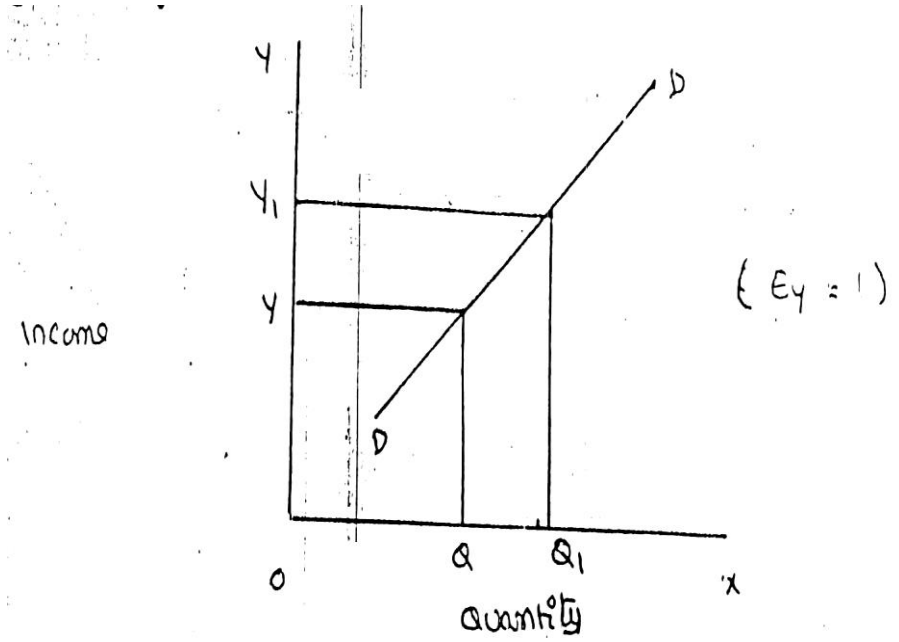

Y
D
Y_1
Y
Income
$(E_y = 0)$
O
Q
X
Quantity

- B. Negative Income elasticity:

- When income increases, quantity demanded falls. In this case, income elasticity of demand is negative. i.e., Ey < 0.



- C. Positive Income elasticity:
- When an increase in income brings about a proportionate increase in quantity demanded, and then income elasticity of demand is equal to one. Ey = 1



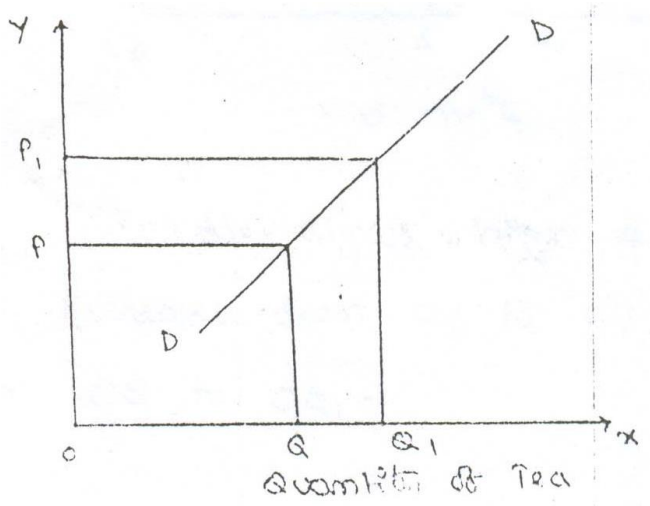
- 3. Cross elasticity of Demand:

- A change in the price of one commodity leads to a change in the quantity demanded of another commodity. This is called a cross elasticity of demand. The formula for cross elasticity of demand is:

- Cross elasticity = Proportionate change in the quantity demand of commodity “X” / Proportionate change in the price of commodity “Y”

- In case of substitutes, cross elasticity of demand is positive. Eg: Coffee and Tea

- When the price of coffee increases, Quantity demanded of tea increases. Both are substitutes.



- 4.Advertising Elasticity of Demand:

It refers to increase in the sales revenue because of change in the advertising expenditure.

There is a direct relationship b/w the amount of money spent on advertising and its impact on sales. It is always +ve.

$$ea = \frac{\text{Change in quantity demanded} / \text{quantity demanded}}{\underline{\text{change in Advertising cost}} / \text{Advertising cost}}$$

$$ea = (Q2 - Q1)/Q1/(A2 - A1)/A1$$

Factors influencing the elasticity of demand

Elasticity of demand depends on many factors.

- 1. Nature of commodity
- 2. Availability of substitutes
- 3. Income Level
- 4. Level of price

- 5. Postponement of Consumption
- 6. Number of Uses
- 7. Share in Total Expenditure
- 8. Time Period
- 9. Habits

- 1. Nature of commodity:

Elasticity of demand of a commodity is influenced by its nature. A commodity for a person may be a necessity, a comfort or a luxury.

- 2. Availability of substitutes:

Demand for a commodity with large number of substitutes will be more elastic. The reason is that even a small rise in its prices will induce the buyers to go for its substitutes. For example, a rise in the price of Pepsi encourages buyers to buy Coke and vice-versa.

- 3. Income Level:

Elasticity of demand for any commodity is generally less for higher income level groups in comparison to people with low incomes. It happens because rich people are not influenced much by changes in the price of goods. But, poor people are highly affected by increase or decrease in the price of goods. As a result, demand for lower income group is highly elastic.

- 4. Level of price:

Level of price also affects the price elasticity of demand. Costly goods like laptop, Plasma TV, etc. have highly elastic demand as their demand is very sensitive to changes in their prices. However, demand for inexpensive goods like needle, match box, etc. is inelastic as change in prices of such goods do not change their demand by a considerable amount.

- 5. Postponement of Consumption:

Commodities like biscuits, soft drinks, etc. whose demand is not urgent, have highly elastic demand as their consumption can be postponed in case of an increase in their prices. However, commodities with urgent demand like life saving drugs, have inelastic demand because of their immediate requirement.

- 6. Number of Uses:

If the commodity under consideration has several uses, then its demand will be elastic. When price of such a commodity increases, then it is generally put to only more urgent uses and, as a result, its demand falls. When the prices fall, then it is used for satisfying even less urgent needs and demand rises.

For example, electricity is a multiple-use commodity. Fall in its price will result in substantial increase in its demand, particularly in those uses (like AC, Heat convector, etc.), where it was not employed formerly due to its high price. On the other hand, a commodity with no or few alternative uses has less elastic demand.

- 7.Share in Total Expenditure:

Proportion of consumer's income that is spent on a particular commodity also influences the elasticity of demand for it. Greater the proportion of income spent on the commodity, more is the elasticity of demand for it and vice-versa.

Demand for goods like salt, needle, soap, match box, etc. tends to be inelastic as consumers spend a small proportion of their income on such goods. When prices of such goods change, consumers continue to purchase almost the same quantity of these goods. However, if the proportion of income spent on a commodity is large, then demand for such a commodity will be elastic.

- 8. Time Period:

Price elasticity of demand is always related to a period of time. It can be a day, a week, a month, a year or a period of several years. Elasticity of demand varies directly with the time period. Demand is generally inelastic in the short period.

It happens because consumers find it difficult to change their habits, in the short period, in order to respond to a change in the price of the given commodity. However, demand is more elastic in long run as it is comparatively easier to shift to other substitutes, if the price of the given commodity rises.

- 9. Habits:

Commodities, which have become habitual necessities for the consumers, have less elastic demand. It happens because such a commodity becomes a necessity for the consumer and he continues to purchase it even if its price rises. Alcohol, tobacco, cigarettes, etc. are some examples of habit forming commodities.

- Finally it can be concluded that elasticity of demand for a commodity is affected by number of factors. However, it is difficult to say, which particular factor or combination of factors determines the elasticity. It all depends upon circumstances of each case.

Measurement of Elasticity of Demand:

1. The Percentage Method
2. The Point Method
3. The Arc Method
4. The Total Outlay Method

- 1. The Percentage Method:

The price elasticity of demand is measured by its coefficient (Ep). This coefficient (Ep) measures the percentage change in the quantity of a commodity demanded resulting from a given percentage change in its price.

Thus

$$E_p = \frac{\%\ \text{change in } q}{\%\ \text{change in } p} = \frac{\Delta q / q}{\Delta p / p} = \frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

- Where q refers to quantity demanded, p to price and Δ to change. If EP>1, demand is elastic. If EP< 1, demand is inelastic, and Ep= 1, demand is unitary elastic.

- With this formula, we can compute price elasticities of demand on the basis of a demand schedule.

Table.1 : Demand Schedule

Combination	*Price (Rs.) Per Kg. of X*	*Quantity Kgs.of X*
A	6	0
B	5	10
C	4	20
D	3	30
E	2	40
F	1	50
G	0	60

- Let us first take combinations B and D.

- Suppose the price of commodity X falls from Rs. 5 per kg. to Rs. 3 per kg. and its quantity demanded increases from 10 kgs.to 30 kgs.

- Then

$$E_p = \frac{\Delta q}{\Delta p} \times \frac{p}{q} = \frac{(30-10)}{(3-5)} \times \frac{5}{10} = \frac{20}{-2} \times \frac{5}{10} = -5 \text{ or } > 1.$$

2. The Point Method:

Prof. Marshall devised a geometrical method for measuring elasticity at a point on the demand curve. Let RS be a straight line demand curve in Figure. 2. If the price falls from PB (= OA) to MD (= OC), the quantity demanded increases from OB to OD.

- $EP = \Delta q/\Delta p \times p/q$

Where Δq represents change in quantity demanded, Δp changes in price level while p and q are initial price and quantity levels.

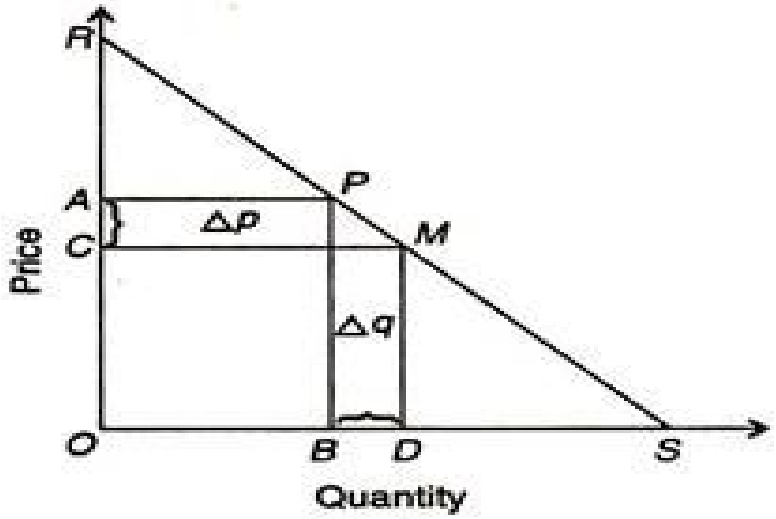


Fig. 2

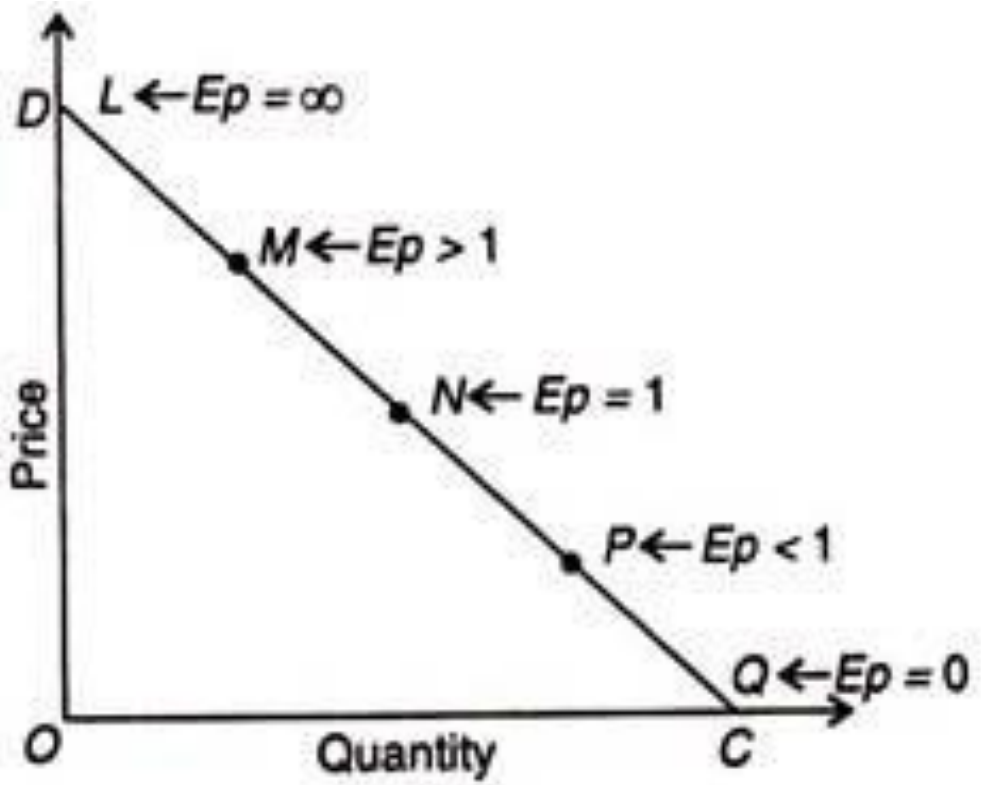


Fig. 3

With the help of the point method, it is easy to point out elasticity at any point along a demand curve. Suppose that the straight line demand curve DC in Figure. 3 is 6 centimeters. Five points L, M, N, P and Q are taken on this demand curve. The elasticity of demand at each point can be known with the help of the above method. Let point N be in the middle of the demand curve. So elasticity of demand at point.

$$N = \frac{CN\ (Lower\ Segment)}{ND\ (Upper\ Segment)} = \frac{3}{3} = 1\ (Unity)$$

Elasticity of demand at point

$$M = \frac{CM}{MD} = \frac{5}{1} = 5\ or > 1.$$

(Greater than Unity)

Elasticity of demand at point

$$L = \frac{CL}{LD} = \frac{6}{0} = \infty\ (infinity).$$

Elasticity of demand at Point

$$P = \frac{CP}{PD} = \frac{1}{5} = (Less\ than\ Unity).$$

Elasticity of demand at point

$$Q = \frac{CQ}{QD} = \frac{0}{6} = 0\ (Zero)$$

We arrive at the conclusion that at the mid-point on the demand curve, the elasticity of demand is unity. Moving up the demand curve from the mid-point, elasticity becomes greater. When the demand curve touches the Y- axis, elasticity is infinity. Ipso facto, any point below the mid-point towards the A'-axis will show elastic demand. Elasticity becomes zero when the demand curve touches the X -axis.

- 3. The Arc Method:

We have studied the measurement of elasticity at a point on a demand curve. But when elasticity is measured between two points on the same demand curve, it is known as arc elasticity. In the words of Prof. Baumol, “Arc elasticity is a measure of the average responsiveness to price change exhibited by a demand curve over some finite stretch of the curve.”

- Any two points on a demand curve make an arc. The area between P and M on the DD curve in Figure. 4 is an arc which measures elasticity over a certain range of price and quantities. On any two points of a demand curve, the elasticity coefficients are likely to be different depending upon the method of computation. Consider the price-quantity combinations P and Mas given

Table 2: Demand Schedule

Point	Price (Rs)	Quantity (Kg)
P	8	10
M	6	12

If we move from P to M, the elasticity of demand is

$$E_p = \frac{\Delta Q}{\Delta P} \times \frac{p}{q} = \frac{(12-10)}{(6-8)} \times \frac{8}{10} = \frac{2}{-2} \times \frac{8}{10} = \frac{4}{5}$$

- If we move in the reverse direction from M to P, then

$$\frac{(10-20)}{(8-6)} \times \frac{6}{12} = \frac{-2}{2} \times \frac{6}{12} = -\frac{1}{2}$$

- Thus the point method of measuring elasticity at two points on a demand curve gives different elasticity coefficients because we used a different base in computing the percentage change in each case.

- To avoid this discrepancy, elasticity for the arc (PM in Figure 4) is calculated by taking the average of the two prices [(p1 + p2)½] and the average of the two quantities [(q, +q2)½]. The formula for price elasticity of demand at the mid-point (C in Figure 4) of the arc on the demand curve is

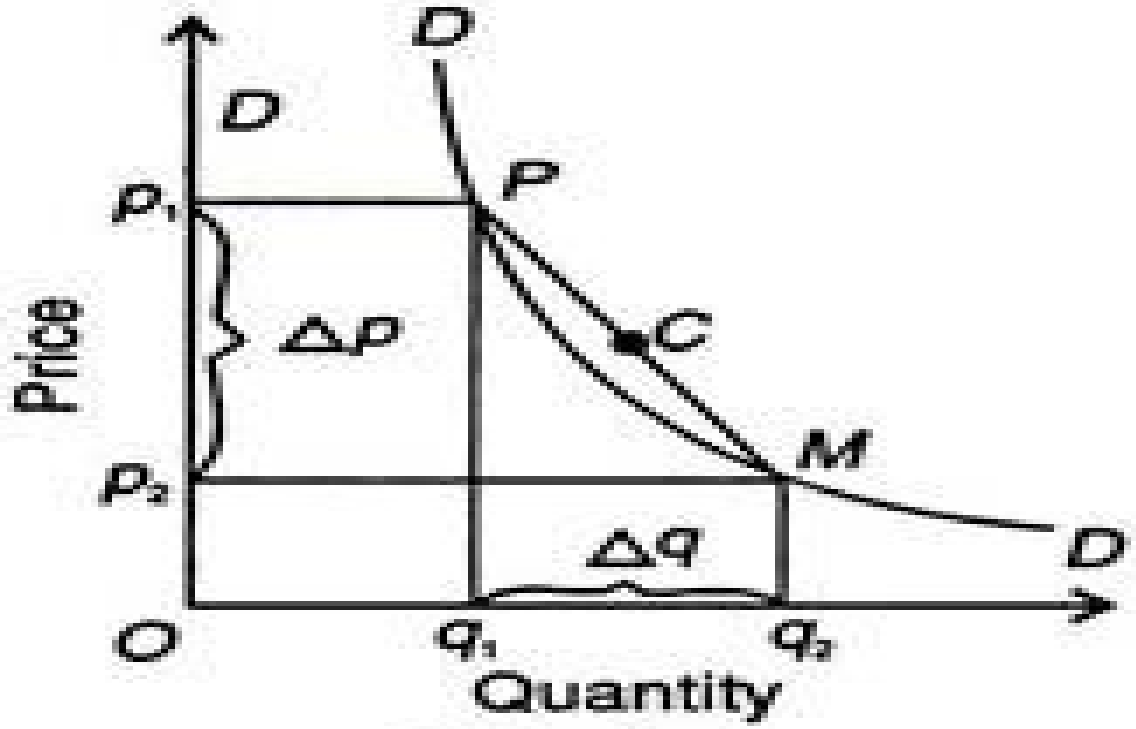


Fig. 4

$$E_p = \frac{\frac{\Delta q}{(q_1+q_2)^{1/2}}}{\frac{\Delta p}{(p_1+p_2)^{1/2}}} = \frac{\Delta q}{(q_1+q_2)^{1/2}} \times \frac{(p_1+p_2)^{1/2}}{\Delta p} = \frac{\Delta q}{\Delta p} \times \frac{p_1+p_2}{q_1+q_2}$$

- 4.The Total Outlay Method:
- Marshall evolved the total outlay, or total revenue or total ex-penditure method as a measure of elasticity. By comparing the total expenditure of a purchaser both before and after the change in price, it can be known whether his demand for a good is elastic, unity or less elastic.

- Total outlay is price multiplied by the quantity of a good purchased: Total Outlay = Price x Quantity Demanded.
- This is explained with the help of the demand schedule in Table.3.

Table. 3 : Total Outlay Method

Price Rs. per Kg.	*Quantity in Kgs.*	*TE in Rs*	*Ep*
(1)	(2)	(1×2)=3	(4)
9	2	18	
8	3	24	> 1
7	4	28	
6	5	30	
5	6	30	= 1
4	7.5	30	
3	8	24	
2	9	18	< 1
1	10	10	

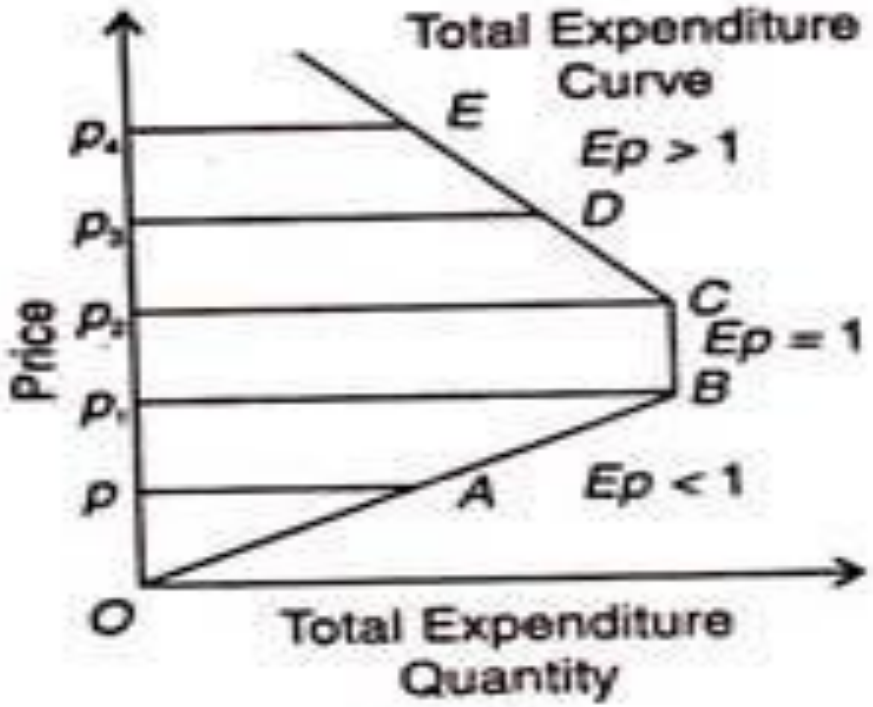

Total Expenditure Curve
E
D
C
B
A
p_4
p_3
p_2
p_1
p
Ep > 1
Ep = 1
Ep < 1
Price
O
Total Expenditure Quantity

Fig. 5

- In the first stage, when the price falls from OP4 to OP3 and to OP2 respectively, the total expenditure rises from P4 E to P3 D and P2 C respectively. On the other hand, when the price increases from OP2 to OP3 and OP4, the total expenditure decreases from P2 C to P3 D and P4 E respectively.

- Thus EC segment of total expenditure curve shows elastic demand (Ep > 1).

- In the second stage, when the price falls from OP2 to OP1 or rises from OP1 to OP2, the total expenditure equals, P2C = P1B, and the elasticity of demand is equal to the unity (Ep = 1).

- In the third stage, when the price falls from Op1 to Op, the total expenditure also falls from P1 B to PA. Thus with the rise in price from OP to Op1, the total expenditure also increases from PA to P 1B and the elasticity of demand is less than unity (Ep < 1).

- Demand Forecasting

- The information about the future is essential for both new firms and those planning to expand the scale of their production. Demand forecasting refers to an estimate of future demand for the product.

- It is an ‘objective assessment of the future course of demand”. In recent times, forecasting plays an important role in business decision-making. Demand forecasting has an important influence on production planning. It is essential for a firm to produce the required quantities at the right time.

- It is essential to distinguish between forecasts of demand and forecasts of sales. Sales forecast is important for estimating revenue cash requirements and expenses. Demand forecasts relate to production, inventory control, timing, reliability of forecast etc. However, there is not much difference between these two terms.

- Types of demand Forecasting:

- Based on the time span and planning requirements of business firms, demand forecasting can be classified in to

- 1. Short-term demand forecasting and
- 2. Long – term demand forecasting.

- 1. Short-term demand forecasting:

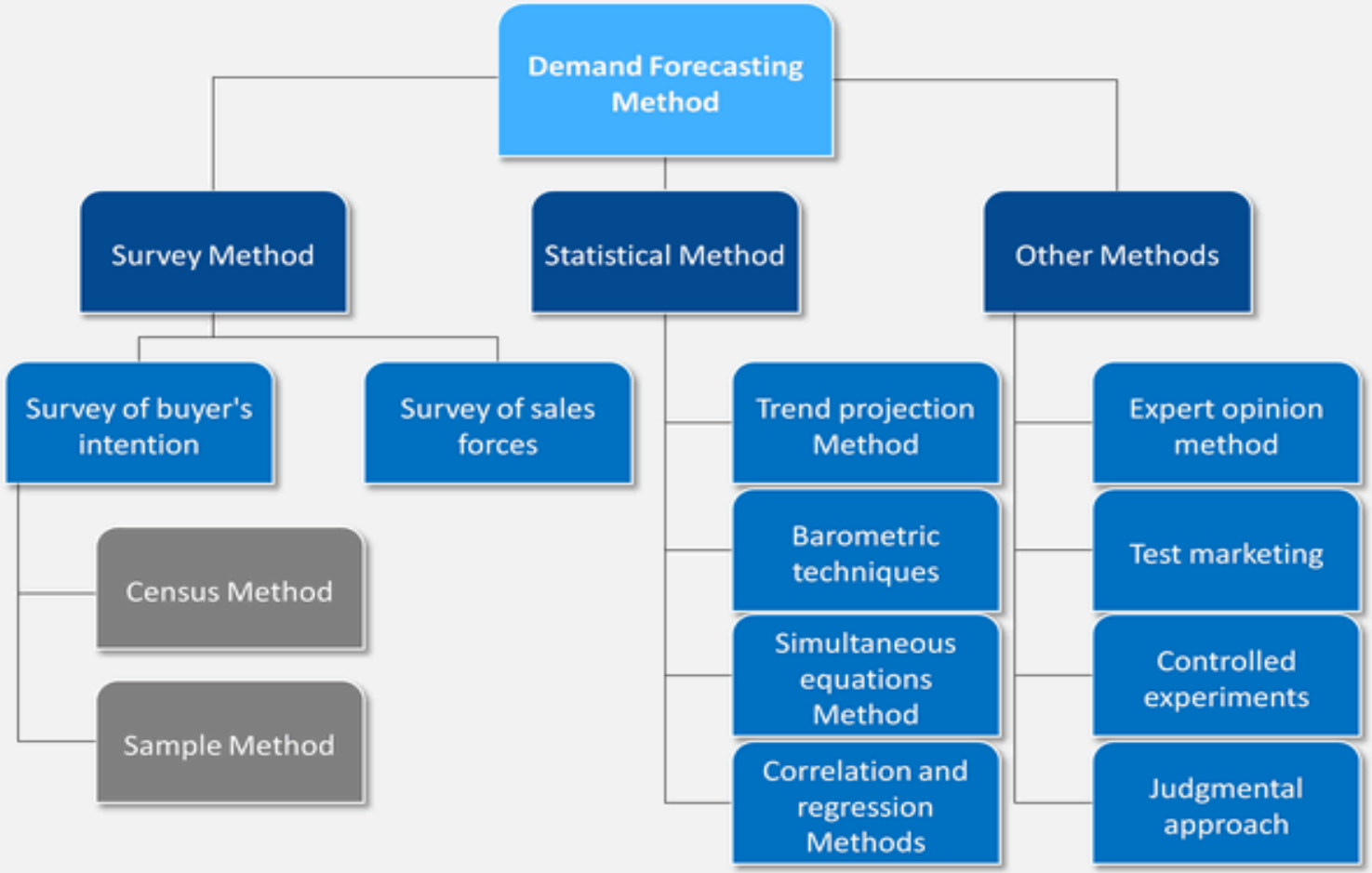
- Short-term demand forecasting is limited to short periods, usually for one year. It relates to policies regarding sales, purchase, price and finances. It refers to existing production capacity of the firm. Short-term forecasting is essential for formulating is a suitable price policy.
- If the business people expect of rise in the prices of raw materials of shortages, they may buy early. This price forecasting helps in sale policy formulation. Production may be undertaken based on expected sales and not on actual sales. Further, demand forecasting assists in financial forecasting also. Prior information about production and sales is essential to provide additional funds on reasonable terms.

- 2. Long – term forecasting:

- In long-term forecasting, the businessmen should now about the long-term demand for the product. Planning of a new plant or expansion of an existing unit depends on long-term demand. Similarly a multi product firm must take into account the demand for different items. When forecast are mode covering long periods, the probability of error is high. It is very difficult to forecast the production, the trend of prices and the nature of competition. Hence quality and competent forecasts are essential.

DEMAND FORECASTING

Methods of Demand Forecasting



- Survey Method:

- Survey method is one of the most common and direct methods of forecasting demand in the short term. This method encompasses the future purchase plans of consumers and their intentions. In this method, an organization conducts surveys with consumers to determine the demand for their existing products and services and anticipate the future demand accordingly.

- Survey of Buyer's Intention :
- The consumers are contacted personally to disclose their future purchase plans.

- A. Census Method: All consumers are contacted to know their preferences for the products in future.

- B. Sample Method: method a sample of consumers is selected for interview.

- Survey of Sales Forces :

- The company elicits the opinion of its sales force regarding the future demand for the product given an outline of its features and prices
- Collective Opinion Techniques
- Delphi Techniques

- Statistical Methods:
- Statistical methods are complex set of methods of demand forecasting. These methods are used to forecast demand in the long term. In this method, demand is forecasted on the basis of historical data and cross-sectional data.

- Historical data refers to the past data obtained from various sources, such as previous years' balance sheets and market survey reports. On the other hand, cross-sectional data is collected by conducting interviews with individuals and performing market surveys. Unlike survey methods, statistical methods are cost effective and reliable as the element of subjectivity is minimum in these methods.

- Trend projection Method:
- Trend projection or least square method is the classical method of business forecasting. In this method, a large amount of reliable data is required for forecasting demand. In addition, this method assumes that the factors, such as sales and demand, responsible for past trends would remain the same in future.

- In this method, sales forecasts are made through analysis of past data taken from previous year's books of accounts. In case of new organizations, sales data is taken from organizations already existing in the same industry. This method uses time-series data on sales for forecasting the demand of a product.

- Trend projection method:

- These are generally based on analysis of past sales pattern.

- Time series analysis
- Trend line by observation
- Least squares method
- Moving average method
- Exponential smoothind average method

TIME SERIES ANALYSIS IS DIVIDED INTO FOUR CATEGORIES:

- 1)TREND
- 2)SEASONAL VARIATIONS.
- 3)CYCLICAL VARIATIONS.
- 4)RANDOM FLUCTUATIONS.

- 1)TREND:- Past data is used to predict the future sales of firm trend is a long term increase or decrease in the variable.
- 2)SEASONAL VARIATIONS:- It is taken into account the Variations in demand during different seasons. Eg:- The sale of cotton dresses increases in summer. The sale of Woolen clothes increases in winter.
- 3)CYCLICAL VARIATIONS:- This variations in demand due to the fluctuations in the business cycle – Boom, recession and depression.
- 4) RANDOM FLUCTUATIONS:- It may happen due to Natural calamities like flood, earthquake, etc. Which cannot be predicted accurately.

- Barometric Method:

- In barometric method, demand is predicted on the basis of past events or key variables occurring in the present. This method is also used to predict various economic indicators, such as saving, investment, and income. This method was introduced by Harvard Economic Service in 1920 and further revised by National Bureau of Economic Research (NBER) in 1930s.

- This technique helps in determining the general trend of business activities. For example, suppose government allots land to the XYZ society for constructing buildings. This indicates that there would be high demand for cement, bricks, and steel.

- The main advantage of this method is that it is applicable even in the absence of past data. However, this method is not applicable in case of new products. In addition, it loses its applicability when there is no time lag between economic indicator and demand.

- simultaneous equation Method:

- The simultaneous equation of forecasting involves estimating several simultaneous questions. These equations are, generally, behavioural equations, mathematical identities and market clearing equations. The simultaneous equations method is a complete and systematic approach to forecast. The first step in this technique is to develop a complete model and specify the behavioural assumptions regarding variables included in the model.

- Correlation and regression methods:

- Correlation and regression methods are statistical techniques. Correlation describes the degree of association between two variables such as sales and advertisement expenditure. When two variables are tend to change together, then they are said be correlated. The extent to which they are correlated is measured by correlation coeffient. Of these two variables, one is a dependent variable and the other is independent variable.

- Regression analysis:
- An equation is estimated which best fits in the sets of observations of dependent variables and independent variables . The best estimate which best fits in the sets of observation of dependent variables and independent variables.
- The best estimate of the underlying relationship between these variables is thus generated. The dependent variables is then forecast based on this estimated equation for a given value of the independent variable.

- In regression method, the demand function for a product is estimated where demand is dependent variable and variables that determine the demand are independent variable. If only one variable affects the demand, then it is called single variable demand function.

- Expert Opinion method:
- The expert opinion method, also known as “EXPERT CONSENSUS METHOD”, is being widely used for demand forecasting.
- This method utilizes the findings of market research and the opinions of management executives, consultants, and trade association officials, trade journal editors and sector analysts. When done by
- An expert, qualitative techniques provide reasonably good forecasts for a short term because of the expert’s familiarity with the issues and the problems involved.
- DELPH I METHOD: The Delphi method is primarily used to forecast the demand for “NEW PRODUCTS”.

- Controlled experiments:

- Controlled experiments are conducted to the test demand for a new product launched or to test the demands for various brands of a product.
- They are selected some consumers.

- Test Marketing:

- Involves real markets in whichconsumers actually buy a productwithout the consciousness of beingobserved.
- product is actually sold in certain segments of the market, regarded as the “test market”.
- Choice and number of test market(s)and duration of test are very crucial to the success of the results.

- Judgmental approach method:

- Judgmental forecasting methods incorporate intuitive judgment, opinions and subjective probability estimates.
- Judgmental forecasting is used in cases where there is lack of past or historical data or during completely new and unique market conditions.
- Useful for medium to long range forecasting tasks.
- Provide a basis for some important decisions

THANK YOU