DEMAND ANALYSIS
DEMAND DETERMINANTS

Demand determinants refer to the factors that affect demand for commodity (a consumer good), such as:

- Price of the Commodity
- Income of the Consumer
- Price of related goods
- Taste and preference of consumer
- Growth of population
- Government policy
- Climatic conditions
- Income distribution
- Expected change in price
- Future expectation about income etc.
DEMAND DETERMINANTS

Some important determinants of demand are discussed as follows:

- **Price of the Commodity**
  Normally, quantity demanded of a commodity varies inversely with its price, ceteris paribus (i.e. other things remaining the same). As price of a commodity rises, quantity demanded of it falls and as price of the commodity falls, quantity demanded of it rises.

- **Income of the Consumer**
  Change in income of the consumer also brings about changes in demand for a commodity.
  Demand for a normal good varies directly with income of the consumer, other things remaining the same. Normal goods are those goods whose demand increases with increase in income of the consumer and vice versa. Demand for inferior goods decreases with increases in income of the consumer.
Price of Related Goods
Goods are said to be related when they are either substitute goods or complementary goods. Substitute goods are those goods which compete with each other to satisfy a particular want. E.g. railways and airways, branded mobiles and Chinese mobile. etc. Complementary goods are those goods which are jointly demanded to satisfy a particular want. Examples of complementary goods are car and petrol, etc.

*In case of substitute goods:* Quantity demanded of a commodity varies directly with the price of its substitute. *In case of complementary goods:* Quantity demanded of a commodity varies inversely with the price of its complementary goods.

Taste And Preferences
Demand for goods is affected by taste and preferences of the consumer which are subjective in nature, and are shaped by individual like and dislikes, faith and belief, fashions, habits, trends etc.
There are three kinds of demand relations which are usually studied under demand analysis such as: Price Demand, Income Demand and Cross Demand.

**Price Demand:** Price demand studies how demand for a commodity ($D_x$) changes with respect to change in price($P_x$), *ceteris paribus* (other things remaining the same).

$$D_x = f(P_x)$$

**Income Demand:** Income Demand examines how demand for commodity ($D_x$) changes as a result of change in income of the consumer($Y$), *ceteris paribus* (other things remaining the same).

$$D_x = f(Y)$$

**Cross Demand:** Cross demand studies how quantity demand of a commodity ($D_x$) changes as a result of change in price of its related goods ($P_R$), *ceteris paribus*. Cross demand function can be denoted as follows:

$$D_x = f(P_R)$$
The law of demand states that normally quantity demanded of a commodity varies inversely with price, ceteris paribus.

In other words, the law of demand states that other things remaining the same, lesser quantity of a commodity will be demanded at higher prices, and more quantity of it will be demanded at lower prices.
Demand curve

Demand curve is the graphical representation of the relationship between demand for a commodity \((D_x)\) and its price \((P_x)\).

Normally, a demand curve slopes downward from left to right indicating the operation of the law of demand.
Exceptional Demand Curves/
Exception to Demand curve or Law of Demand

In some rare situations, the law of demand does not hold good.

In such situations, the demand curve slopes upward instead of sloping downward suggesting a rise in demand with rising price.

Cases in which this tendency is observed are referred to as exceptions to the general law of demand.

Here demand curve DD curve is known as an exceptional demand curve.
Exceptions to law of demand are

- Giffen goods,
- conspicuous consumption
- conspicuous necessities,
- expected changes in price,
- extraordinary situations like natural disasters, famine, riots etc
Giffen goods:
In case of certain inferior goods called Giffen goods, when the price falls, quite often less quantity will be purchased than before because of the negative income effect and people’s increasing preference for a superior commodity with the rise in their real income. Few examples of giffen goods are cheap potatoes, coarse cloth, coarse grain, etc.

Conspicuous consumption:
Some expensive commodities like diamonds, expensive cars, exorbitantly high priced mobile phones etc., are used as status symbols to display one’s wealth or, to distinguish oneself from average people. The more expensive these commodities become, the higher their value as a status symbol and hence, the greater the demand for them. Law of demand does not apply here.

Conspicuous necessities:
certain things become necessities of modern life. These are purchased even if their prices rise. E.g. TV, refrigerators, mobile phones, automobiles.
Expected Changes in Price:
Expected or anticipated changes in price of a commodity in future also can affect quantity demanded of it at present. If it is expected that the price of a commodity will rise in future, the demand for it rise and vice versa.

Extraordinary situations:
War, famines, riots, natural calamities are extra ordinary situations when people’s behavior becomes abnormal. Law demand does not apply in abnormal situations.
ELASTICITY OF DEMAND

Elasticity of demand is the measure of the responsiveness of quantity demanded of a commodity in response to change in a particular demand determinant (say price) while keeping other determinants constant (such as: income, or price of related good, advertisement, growth of population and so on). Algebraically, it is defined as

\[
e_D = \frac{\frac{dQ}{Q}}{\frac{dZ}{Z}} = \left(\frac{dQ}{dZ}\right)\left(\frac{Z}{Q}\right)
\]

Where \( e_D \) is elastic of demand
Q is quantity demanded
Z is any demand determinant (initial)
dQ is change in quantity demanded
dZ is change in demand determinant
CONCEPTS OF ELASTICITY OF DEMAND

There may be as many as concepts of elasticity of demand as the number of demand determinants. Most important concepts of elasticity of demand are:

- Price elasticity of demand (here the demand determinant is price of the commodity)

- Income elasticity of demand (here the demand determinant is income of consumer)

- Cross elasticity of demand (here the demand determinant is price of related goods)
PRICE ELASTICITY OF DEMAND

Price Elasticity of demand is the measure of the responsiveness of quantity demanded of a commodity in response to change in price, ceteris paribus.

Algebraically,

\[
e_p = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}
\]

\[
e_p = \frac{dQ}{Q} \frac{P}{dP}
\]

\[
e_p = \left(\frac{dQ}{dP}\right) \times \left(\frac{P}{Q}\right)
\]

Where \(e_p\) is elastic of demand
Q is quantity demanded (initial)
P is price of the commodity (initial)
dQ is change in quantity demanded
dP change in price

***Price elasticity usually carries a negative sign because of inverse relationship between price and demand. However, it is absolute value of price elasticity of demand that determines the different degrees/kinds of price elasticity of demand.
KINDS OF PRICE ELASTICITY OF DEMAND

- Perfectly elastic demand: \(|e_p| = \alpha (\infty)|
- Elastic Demand / Relatively Elastic Demand: \(|e_p| > 1|
- Unit Elastic Demand: \(|e_p| = 1|
- Inelastic Demand / Relatively Inelastic Demand: \(|e_p| < 1|
- Perfectly inelastic Demand: \(|e_p| = 0|
PERFECTLY ELASTIC DEMAND

When quantity demanded of the commodity changes though there is no change in price, it is known as perfect elastic demand.

In case of Perfectly elastic demand, $|e_p| = \alpha (\infty)$
When the proportionate change in demand is more than the proportionate changes in price, it is known as relatively elastic demand. E.g. luxury goods

In case of elastic demand, \[ |e_p| > 1 \]
Unit elastic demand equal

When the proportionate change in demand is equal to proportionate changes in price, it is known as unitary elastic demand.

In case of unit elastic demand,

$$|e_p| = 1$$
When the proportionate change in demand is less than the proportionate changes in price, it is known as relatively inelastic demand. e.g. necessities, electricity etc.

In case of inelastic demand,

$$|e_P| < 1$$
PERFECTLY INELASTIC DEMAND

When a change in price, howsoever large, change no changes in quality demand, it is known as perfectly inelastic demand. E.g. salts

In case of perfectly inelastic demand, \(|e_p| = 0\)
Income Elasticity Of Demand

Income Elasticity of demand is the measure of the responsiveness of quantity demanded of a commodity in response to change in income of the consumer, ceteris paribus.

\[ e_Y = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in income of consumer}} \]

\[ e_Y = \frac{dQ/Q}{dY/Y} \]

or,

\[ e_Y = \left( \frac{dQ}{dY} \right) \left( \frac{Y}{Q} \right) \]

Where

- \( e_Y \) is income elasticity of demand
- \( Q \) is the quantity demanded (initial)
- \( Y \) is the income of the consumer (initial)
- \( dQ \) is the change in quantity demanded
- \( dY \) is the change in income
KINDS OF INCOME ELASTICITY OF DEMAND

- **Positive Income elasticity of demand which includes**
  - Unitary Income Elasticity \( (e_y = 1) \) indicates that a proportionate (percentage or relative) change in quantity demanded is equal to proportionate change in money income.
  - High Income Elasticity \( (e_y > 1) \) indicates that a proportionate change in quantity demanded is more than proportionate change in money income. E.g. luxuries
  - Income elasticity less than unity / Low Income Elasticity \( (e_Y < 1) \) indicates that a proportionate change in quantity demanded is less than proportionate relative change in money income. E.g. necessities

- **Zero Income elasticity /Perfectly Inelastic Income demand** \( (e_Y = 0) \) indicates a change in income will have no effect on the quantity demanded e.g. salts

- **Negative income elasticity** \( (e_Y < 0) \) [in case of inferior goods] indicates that less is bought at higher incomes and more is bought at lower incomes.
Cross Elasticity Of Demand

Cross Elasticity of demand is the measure of the responsiveness of quantity demanded of a commodity in response to change in price of its related goods, ceteris paribus. It can be written as:

\[ e_{AB} = \frac{\text{percentage change in quantity demanded of good A}}{\text{percentage change in price of related good B}} \]

or,

\[ e_{AB} = \frac{\frac{dQ_A}{Q_A}}{\frac{dP_B}{P_B}} \]

or,

\[ e_{AB} = \left( \frac{dQ_A}{dP_B} \right) \left( \frac{P_B}{Q_A} \right) \]

Where

- \( e_{AB} \) is cross elasticity of demand
- \( Q_A \) is the quantity demanded of commodity A (initial)
- \( P_B \) is the Price of the commodity B(initial)
- \( d Q_A \) is the change in quantity demanded of commodity A
- \( d P_B \) is the change in price
KINDS OF CROSS ELASTICITY OF DEMAND

- **Positive Cross elasticity of demand** ($e_{AB} > 0$) when the goods A and B are substitutes] e.g. Coca cola and Pepsi, Chinese mobile phones and smart phones.

- **Negative Cross elasticity of demand** ($e_{AB} < 0$) [when the goods A and B are complementary] e.g. vehicle and petrol

- **Zero Cross elasticity of demand** ($e_{AB} = 0$) [when the goods A and B are independent/unrelated] e.g. gold and rice.
GEOMETRIC METHOD / POINT METHOD OF MEASURING ELASTICITY OF DEMAND

Geometric method attempts to measure numerical elasticity of demand at a particular point on the demand curve. The method is applied when changes in price and the resultant change in quantity demanded are infinitely small. As per point method,

Thus,

\[ e_P = \frac{\text{propionate change in quantity demanded}}{\text{propionate change in price}} \]

\[ e_P = \frac{dQ}{Q} \cdot \frac{P}{dP} \]

\[ e_P = (\frac{dQ}{dP}) \times \left( \frac{P}{Q} \right) \]

Where,

- \( e_P \) is price elasticity of demand
- \( Q \) is quantity demanded (initial)
- \( P \) is price of the commodity (initial)
- \( dQ \) is change in quantity demanded
- \( dP \) change in price
Price elasticity of demand at point D at demand curve AB can be written as

\[ e_p \text{ at point } D \text{ on demand curve } AB = \frac{BD}{AD} \]

\[ e_p \text{ at any point on the demand curve} = \frac{\text{Lower segment of Demand Curve}}{\text{Upper Segment of Demand curve}} \]
Different kinds of price elasticity of demand is shown in the following through geometric method.
SUPPLY

Supply indicates quantities of a commodity offered for sale at each possible price at a given time period, other things constant.

Determinants of Supply
- Price of the product
- State of technology
- Prices of relevant resources
- Prices of alternative goods
- Producer expectations
- Number of producers/sellers in the market
**LAW OF SUPPLY**

*Law of supply* states that normally, the quantity supplied varies directly with its price, other things constant.

In other words, law of supply states that lower the price, the smaller the quantity supplied and higher the price, the greater the quantity supplied.
Supply curve is the graphical representation of the relationship between supply of a commodity ($D_x$) and its price ($P_x$).

Normally, a supply curve slopes upward from left to right indicating the operation of the law of supply.
Equilibrium price a commodity is determined at point (E) where market demand is equal to market supply.

At price $P_2$, supply is more demand and thus there is surplus in the market. Price will fall causing supply to fall and demand to rise. Price will continue to fall until it reaches equilibrium price $P_e$ at which $Demand = Supply$ (Equilibrium point E).

At $P_1$, demand is more than supply and as such there is shortage in the market. Price will raise causing demand to fall and supply to rise. Price will continue to rise until it reaches equilibrium price at which $Demand = Supply$ (Equilibrium point E).