[Academic Script]

Consumer Demand: Demand Analysis

Subject:	Business Economics
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Unit No. & Title:	Unit – 2 Consumer Demand
Lecture No. & Title:	Lecture – 4 Consumer Demand: Demand Analysis

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1. Introduction

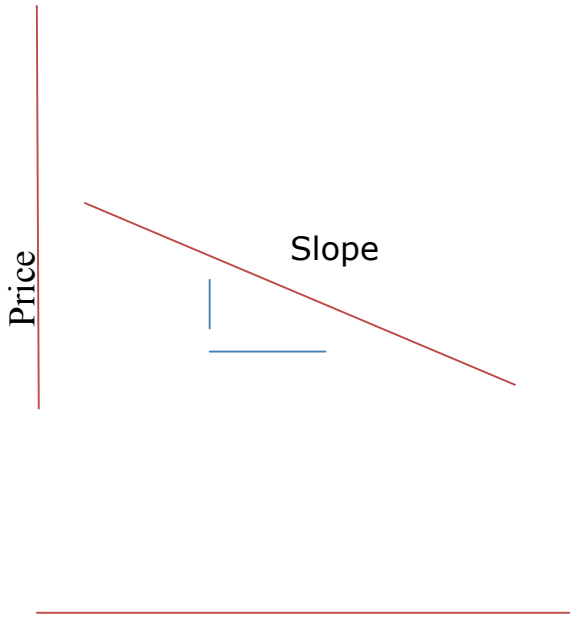
Economics can be broadly categorized into demand side and supply side economics. The demand side represents consumer's choices or preferences. The previous sections have discussed about the different theories of demand, how a consumer arrives at equilibrium, derivation of demand curve, decomposing price effect into income and substitution effect and different applications of indifference curves. This section will discuss the difference between shift and movement in demand, inverse demand function, income elasticity of demand and consumer's surplus.

2. Market Demand

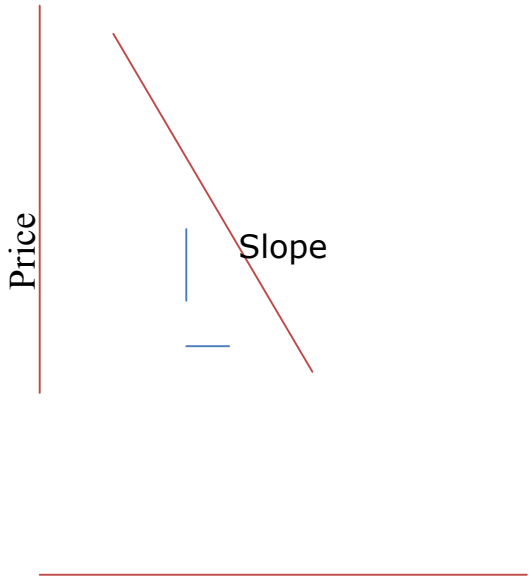
The individual demand curve represents various combinations of individual quantity demanded of a commodity at different prices. When the price-quantity combinations of all individuals in the market are combined, it gives the market demand for a particular commodity.

Market Demand: Elasticity

The relationship between price and demand determines the extent of elasticity and the slope of the demand curve. If the demand is more responsive to the price, the slope decreases and the curve becomes flatter. If the demand is less responsive to the price, the slope increases and the curve becomes steeper.



More Elastic, flatter demand Curve



Less Elastic, steeper demand Curve

3. Shift and movement in the demand

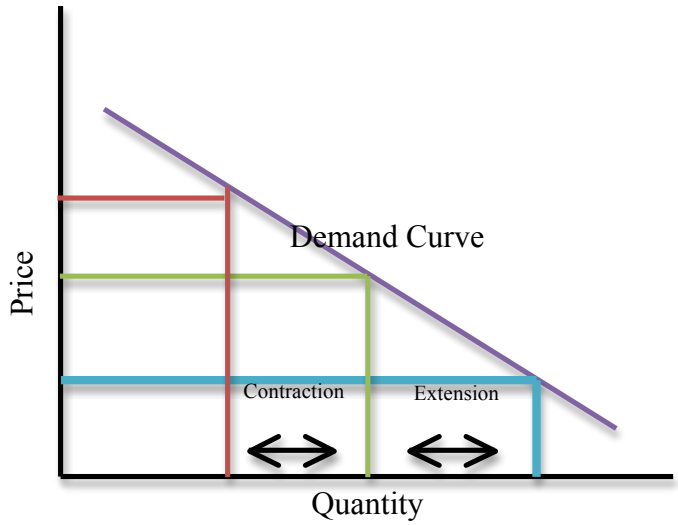
Demand is a function of many variables, out of which price is the most important variable in the law of demand and in construction of the demand schedule and demand curve. Other variables that affect demand include income of the buyers, tastes and preferences, prices of other goods, government policies, subsidies, advertisement, etc. When there is a change in any of these variables, there will be a change in demand for the good as well. When the buyer shifts at different points on the same demand curve, it is called movement in the demand for the commodity, whereas if the buyer moves from one demand curve to another, it is called shift in the demand for the commodity.

Extension and contraction in demand

When quantity demanded of a commodity increases or decreases due to a change in price of that commodity only, other things remaining constant, the buyer moves at different points on the demand curve, this is called extension or contraction in demand. If the price of the commodity decreases, the buyer demands more of the commodity; this is called extension in demand. If the price of the commodity increases, the buyer demands less of the commodity; this is called contraction in demand.

Illustration:

Suppose a buyer demands one kg chikoos at Rs. 80 per kg at a given point of time. Other variables including tastes and preferences, income and price of other goods remaining same, if the price of chikoo increases to Rs. 100 per kg, the buyer will demand less than a dozen chikoos, this is contraction in demand. Alternately, if the price of chikoo decreases to Rs. 50 per kg, the buyer will demand 2 kgs of chikoos, this is extension in demand.

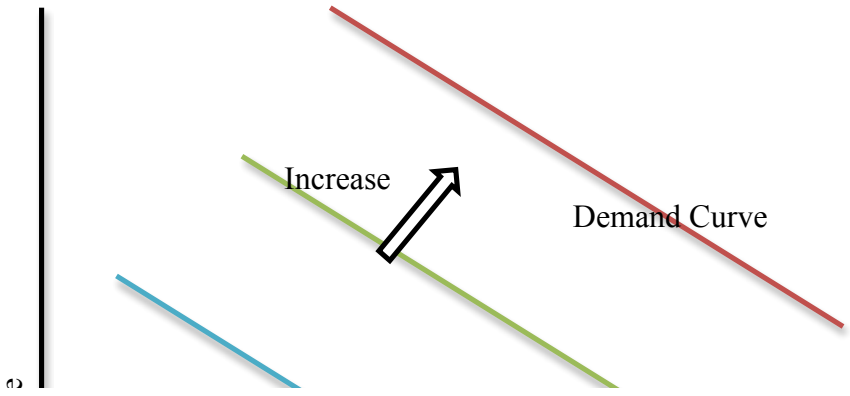


Increase and Decrease in demand

When quantity demanded of a commodity increases or decreases due to a change in factors other than price, the buyer shifts from one demand curve to another, this is called increase and decrease in demand. The factors that affect demand are income of the buyer, tastes and preferences, advertisement, future expectations of prices and so on. If there is positive change in these factors, i.e. if income of the buyers increases, if their tastes and preferences change in favour of the commodity, if they expect the prices to rise in future and if advertisement influences them to buy more of the commodity, then at the same price, buyers would demand more of the commodity, which will lead to an upward shift in the demand curve. Alternately, if there is a negative change in these factors, the buyers will demand less of the commodity at the same price, which will lead to a downward shift in the demand curve.

Illustration:

Suppose a buyer demands one kg mangoes at Rs. 100 per kg. Assuming the price does not change, if there is an increase in the income of the buyer, he will demand 2 kgs of mangoes. If there is decrease in the income, he will demand less than one kilogram of mangoes at the same price.



Quantity

4. Inverse Demand Function

The demand function represents quantity demanded as a function of price. Thus, price is the independent variable and quantity demanded is the dependent variable. Mathematically it is expressed as: **$Q = f(P)$**

The inverse function represents the original relationship in the function in reverse form, i.e. interchanging the variables. The inverse demand function represents price as a function of quantity demanded. Mathematically it is expressed as:

$P = f^{-1}(Q)$ Where f^{-1} = inverse function

5. Revenue and Expenditure

Revenue is defined as the total earnings of a firm or company from the sale of its goods and/or services. Expenditure is defined as total expenses incurred by a firm or company while producing a given amount of goods and/or service.

6. Elasticity and Marginal Revenue

Price Elasticity of demand is defined as the percentage change in quantity demanded due to percentage change in price. In mathematical terms, **$e = \Delta Q/\Delta P \times P/Q$**

Marginal revenue is defined as change in total revenue due to one unit change in quantity. In mathematical terms, **$MR = \Delta TR/\Delta Q$**

Relation between Elasticity and Marginal Revenue

The relation between demand elasticity and marginal revenue is important since both concepts play a key role in decisions regarding price and production in the economy. The demand elasticity will determine how demand will react to change in price, while marginal revenue will determine whether it is profitable to produce additional units of the commodity or not. Hence, it is important to develop a relation between them which can be used to make vital economic decisions. It is mathematically proven that: **$MR = P \times [(1 + e)/e]$**

Where MR = marginal revenue,

P = price,

e = elasticity.

The formula implies

when ($-\infty < e < -1$), demand is elastic MR is positive;
when ($e = -1$), demand is unitary elastic MR is positive;
when ($-1 < e < 0$), demand is inelastic MR is negative.

7. Income elasticity of Demand

Income elasticity of demand represents the percentage change in quantity demanded due to percentage change in income. It is defined as the degree of responsiveness of quantity demanded of a good to a small change in the income of the buyers. Income elasticity of demand is measured as:

$$e_y = \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in income}}$$

$$e_y = \frac{\Delta Q/Q}{\Delta Y/Y}$$

Illustration:

Suppose the weekly income of a buyer is Rs. 1500 and he demands 10 kilograms of vegetables. If his weekly income increases to Rs. 1800, his demand of vegetables increases to 13. We can calculate the income elasticity of demand from this.

$$e_y = \frac{\Delta Q/Q}{\Delta Y/Y}$$

$$\therefore e_y = \frac{(13-10)/10}{(1800-1500)/1500}$$

$$\therefore e_y = \frac{3/10}{300/1500}$$

$$\therefore e_y = 1.5$$

Thus, when income of the buyer increases by Rs. 1, the quantity demanded of the good increases by 1.5 units.

Types of income elasticity

- Relative income elasticity (e_y>1): Increase in income leads to more than proportionate increase in quantity demanded, such goods are luxuries, like TV, AC, automobiles, etc.
- Relative income inelasticity (e_y<1): Increase in income leads to less than proportionate increase in quantity demanded, such goods are necessaries required for basic survival.
- Unitary income elasticity (e_y=1): Increase in income leads to proportionate increase in quantity demanded, generally the case with normal goods.
- Zero Income elasticity (e_y=0): Change in income has no change on quantity demanded, generally the case with neutral goods like salt, matchboxes, medicine.
- Negative Income elasticity (e_y<0): Increase in income leads to a decline in quantity demanded, such goods are inferior goods and as the income of the buyer increases, he shifts to superior goods and reduces the consumption of goods he feels are inferior.

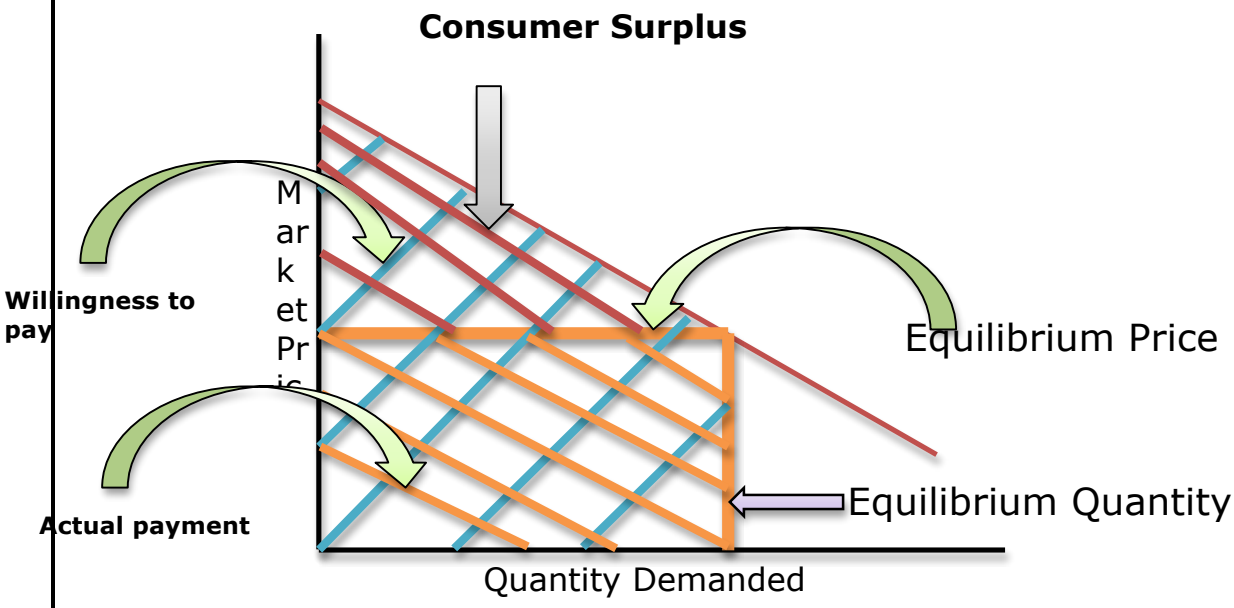
8. Consumer's Surplus

Dupuit first gave the concept of consumer's surplus in 1844, which was further refined by Marshall. This concept is extremely important in welfare economics as well as for formulation of economic policies by the government, because it deals with the satisfaction aspect of the consumers. The theory is based on cardinal theory of demand and assumes that utility can be measured. It is generally believed that consumers get more satisfaction from their purchases than what they pay for it, and they will continue to purchase the good till they earn more utility than their sacrifice in terms of price paid.

Consumer's Surplus is the difference between the willingness to pay for the commodity and the actual price that the consumer pays.

Consumer's Surplus = Willingness to pay – actual payment

The consumer has different willingness to pay at different points on the demand curve, based on the satisfaction he derives from the consumption of the commodity. However, the actual price is fixed by the market. The satisfaction derived by the consumer decreases as he moves down the demand curve and consumes more of the commodity. Once his willingness to pay equals the price that he has to pay for the commodity, he will be fully satisfied and will not consume more of the commodity as his utility is less than the price he is paying. This concept is used to determine what level of prices should be set so that consumer's satisfaction is maximized and optimal level of output is produced so that economy is in equilibrium.



9. Summary

Having acquired information about the different theories of demand, this session analysis demand in detail, with focus on other related terms. The session describes shift and movement in demand-how demand behaves due to change in different variables. It also studies the relation between elasticity and marginal revenue, examines income elasticity of demand and Marshallian concept of consumer surplus in detail. The knowledge of these concepts will help the reader to understand other related concepts in the succeeding sessions.