UNIT –II
DEMAND AND SUPPLY ANALYSIS

Law of Demand and Supply

The law of supply and demand combines two fundamental economic principles describing how changes in the price of a resource, commodity, or product affect its supply and demand.

As the price increases, supply rises while demand declines. Conversely, as the price drops supply constricts while demand grows.

Levels of supply and demand for varying prices can be plotted on a graph as curves. The intersection of these curves marks the equilibrium, or market-clearing price at which demand equals supply, and represents the process of price discovery in the marketplace.

The Law of Demand

The law of demand holds that demand for a product changes inversely to its price, all else being equal. In other words, the higher the price, the lower the level of demand.

The Law of Supply

The law of supply relates price changes for a product with the quantity supplied. In contrast with the law of demand the law of supply relationship is direct, not inverse. The higher the price, the higher the quantity supplied. Lower prices mean reduced supply, all else held equal.

Factors Affecting Supply

In industries where suppliers are not willing to lose money, supply will tend to decline toward zero at product prices below production costs. Price elasticity will also depend on the number of sellers, their aggregate productive capacity, how easily it can be lowered or increased, and the industry's competitive dynamics. Taxes and regulations may matter as well.

Factors Affecting Demand

Consumer income, preferences, and willingness to substitute one product for another are among the most important determinants of demand. Consumer preferences will depend, in part, on a product's market penetration, since the marginal utility of goods diminishes as the quantity owned increases. The first car is more life-altering than the fifth addition to the fleet; the living-room TV more useful than the fourth one for the garage.

Importance of Law of Supply and Demand

The Law of Supply and Demand is essential because it helps investors, entrepreneurs, and economists understand and predict market conditions. For example, a company considering a price hike on a product will typically expect demand for it to decline as a result, and will attempt to estimate the price elasticity and substitution effect to determine whether to proceed regardless.

Law of Demand and Its Exceptions

In an economy, the chief determinants of the market conditions are demand and supply factors. In competitive markets, the price range of the product keeps fluctuating as long as Demand and supply aren't equal. This situation is equilibrium. There are specific exceptions to the law of Demand that we will explore now. In Economics, the law of Demand is true to the lines for most cases. However, some significant exceptions are there.

Exceptions to the Law of Demand

Veblen Goods

The theory of Veblen goods belongs to the next category of exceptions to the law of Demand. Torstein Veblen was the one to highlight this concept. Veblen goods are the ones whose demand increases with their Price. They become more valuable with their price rise. These are the goods people consider to be more useful with

an increase in Price. Like a high-priced gold necklace, it's more desirable to the customer than the one with lower costs. A cell phone model with a high cost has more demand in the market.

Price Change Exception

The issue of price change in the market is another exception to the law of Demand. There might be a situation when the Price of a product or service increases and is subjected to future growth. So, the customers may buy more of it to avoid further cost increment. Eventually, there are times when the Price of a product is about to decrease. Consumers may temporarily stop the purchase to avail of the future benefits of price decrement. Recently, there has been a massive rise in the price of onions. People were buying it more due to the worry of the further cost increase.

Necessary Goods

Let us understand what are the exceptions to the law of demand in the case of necessary items. The Demand for essential goods stays intact even if there's a price rise. People can't stop purchasing the products of regular necessities. For example, if the cost of salt increases, consumers won't be able to afford it. It is the complete opposite of the law of Demand in Economics.

Luxury Goods

A significant exception to the law is the Demand for luxury goods. In such cases, even if the price increases, the consumer won't stop consumption. Cigarettes and alcohol typically come in this category.

Income Change

The change in income of a consumer or a family also determines the Demand for a particular product. If a family's income increases, they may choose to buy a specific product in more quantity, no matter the Price. Again, if the family's income decreases, they can select to reduce product consumption to an extent. It opposes the law of Demand.

Exceptions to Law of supply

The normal law of supply is widely applicable to a large number of Products. There are certain exceptions to law of supply, like a change in the price of a good does not lead to a change in its quantity supplied in the positive direction.

The law of supply is not a universal principle that applies to all circumstances. There are, in fact, various important exceptions to the law of supply. Some exceptions to law of supply are given below:

- Change in business
- Monopoly
- Competition
- Perishable Goods
- Legislation Restricting Quantity
- Agricultural Products
- Artistic and Auction Goods

1. Change in business

It may happen that the seller may plan to enter into an entirely new business by exiting the current one. So when the present business is on the verge of closure then the seller may sell his goods at lower prices to clear them off. So here too the law of supply is not being followed.

2. Monopoly

When a small number of producers control the supply of the market then the law of supply may not operate. For example, in the case of monopoly (single seller) may not necessarily offer a larger quantity supplied even though the price of goods is higher. Market control by the monopoly allows it to set the market price based on demand in the market.

3. Competition

Other market structures like an oligopoly and monopolistic competition may be facing more competition, therefore offering to sell more quantities at lower prices and negating the law of supply.

4. Perishable Goods

In cases of perishable goods, the supplier would offer to sell more quantities at lower prices to avoid losses due to damage to the product.

5. Legislation Restricting Quantity

Suppliers cannot offer to sell more quantities at higher prices where the government has put some regulations on the quantity of the good to be produced or the price ceiling at which the good is to be sold in the market.

6. Agricultural Products

Since the production of agricultural products cannot be increased beyond a certain limit, the supply can also not be increased beyond this limit even if the prices are higher; the producer is unable to offer more quantities.

7. Artistic and Auction Goods

The supply of such goods cannot be increased or decreased easily according to its demand. Thus, it is difficult to offer more quantities even if the prices shoot up.

Elasticity of Demand

The elasticity of demand is an economic concept that describes the extent to which consumers modify their demand for a particular good or service in response to changes in its price. It is measured by analyzing the relationship between changes in the price of a good or service and changes in the quantity demanded by consumers.

Definition

The elasticity of demand is defined as the measure of the responsiveness of consumer demand for a good or service to changes in its price. This concept is fundamental to economics and is used to analyze the relationship between price and demand in various markets.

Objectives of Elasticity of Demand

Elasticity of demand measures the responsiveness of consumer demand to changes in the price of a particular good or service. This concept holds great significance for businesses and policymakers as properly understanding its aims and objectives can facilitate informed decision-making regarding pricing strategies, taxation policies, and other relevant economic measures. Here is some key objective of elasticity of demand.

Pricing Decisions

One of the primary objectives of elasticity of demand is to provide insight into the determination of pricing decisions. By computing the elasticity of demand for a given product or service, corporations can ascertain how much they can escalate or reduce prices before altering consumer demand. This technique assists companies in optimizing their pricing strategies and enhancing their revenue.

Taxation Policies

The elasticity of demand is pivotal in ascertaining taxation policies. If the demand for a particular commodity or amenity is moderately inelastic, policymakers may consider imposing increased taxes on it to generate revenue for the government. Conversely, if the demand for a particular commodity or amenity is exceedingly elastic, policymakers may have to explore alternative revenue streams.

Market Competition

Elasticity of demand also serves the purpose of explaining market competition. Enterprises may employ the elasticity of demand concept to comprehend the extent to which consumers are receptive to fluctuations in the value of a commodity or amenity and tailor their methodologies accordingly. Companies may focus on reducing prices to maintain a competitive edge in the market if there is substantial elasticity of demand for a particular product or service.

Consumer Behavior

Consumer behavior can be explained through the concept of demand elasticity, which examines the relationship between shifts in price and corresponding changes in quantity demanded. This analysis enables businesses and policymakers to understand the factors influencing demand for specific goods or services. Subsequently, this understanding can be leveraged to craft more effective strategies that cater to the needs of consumers.

Importance of Elasticity of Demand

Here is the importance of elasticity of demand mentioned below.

o It helps businesses and policymakers make informed decisions about pricing strategies and taxation policies.

o Elasticity of demand measures is the responsiveness of quantity demanded to a change in price.

o Knowing the elasticity of demand can help businesses. To determine the optimal price point to maximize revenue and profits.

o It can also inform policymakers about the potential impact of taxes or subsidies on consumer behavior and market outcomes.

o The elasticity of demand can also be used to analyze the effectiveness of marketing and promotions.

Types of Elasticity of Demand

Economists use different types of elasticity of demand to analyze the relationship between price and demand. In this part of the article, we will discuss the three most common elasticities of demand: price elasticity of demand (PED), income elasticity of demand (YED), and cross-elasticity of demand.

Price Elasticity of Demand (PED)

The concept of price elasticity of demand refers to the degree to which consumers adjust their demand for a particular good or service in response to changes in its price. Economists use price elasticity to understand how the demand and supply of a product change when its price changes. In addition to demand, supply also has an elasticity called price elasticity of supply, which measures the relationship between supply change and price change.

> **PED = % change in quantity demanded / % change in price**

Where "% change in quantity demanded" is the percentage change in the quantity of a good or service demanded due to a change in its price, and "% change in price" is the percentage change in the price of that good or service.

Income Elasticity of Demand (YED)

The income elasticity of demand reflects the degree of responsiveness in consumer demand to alterations in personal revenue. The income elasticity of demand shows how much people buy when their income changes. You can use a formula to calculate it by comparing the per cent change in what people buy to the percent change in their income. This tells you if something is important or more like a luxury.

The income elasticity of demand helps you see how much people want to buy when they have more or less money. If it's high, people are more likely to buy it when they have more money. Companies use this to know how much they might sell when people's income changes.

> **Income Elasticity of Demand = Percentage Change in Quantity Demanded / Percentage Change in Income**

Cross-elasticity of Demand

Cross-elasticity of demand is an essential metric that assesses the sensitivity of consumer demand for a particular good or service concerning changes in the price of a different good or service.The cross elasticity of demand means how much people change what they want to buy when the price of something else changes. It can happen with things that are alike or go together. If something costs more, people might start buying something else instead that costs less.

Cross elasticity of Demand- % change in quantity demanded of product A / % change in price of product B

Methods of Measuring Elasticity of Demand

The most used way of measuring the elasticity of demand is through the Price Elasticity of Demand (PED).

o When PED is greater than one, the demand is said to be elastic. It means that a small change in price results in a large change in quantity demanded.

o When PED is less than one, the demand is said to be inelastic. It means that a large price change impacts a small quantity demanded change.

o We can also measure the elasticity of demand through income elasticity of demand, which measures how sensitive the quantity demanded of a good or service is to changes in income.

o The cross-price elasticity of demand measures the sensitivity of the quantity demanded. One good or service is to change the price of another good or service.

Significance (or) Importance of Elasticity of Demand

The following points highlight the 10 main importance of elasticity of demand.

1. Determination of Output Level
2. Determination of Price
3. Price Discrimination by Monopolist
4. Price Determination of Factors of Production
5. Demand Forecasting
6. Dumping
7. Determination of Prices of Joint Products and Other.

1. Determination of Output Level:

For making production profitable, it is essential that the quantity of goods and services should be produced corresponding to the demand for that product. Since the changes in demand are due to the change in price, the knowledge of elasticity of demand is necessary for determining the output level.

2. Determination of Price:

The elasticity of demand for a product is the basis of its price determination. The ratio in which the demand for a product will fall with the rise in its price and vice versa can be known with the knowledge of elasticity of demand.

If the demand for a product is inelastic, the producer can charge high price for it, whereas for an elastic demand product he will charge low price. Thus, the knowledge of elasticity of demand is essential for management in order to earn maximum profit.

3. Price Discrimination by Monopolist:

Under monopoly discrimination the problem of pricing the same commodity in two different markets also depends on the elasticity of demand in each market. In the market with elastic demand for his commodity, the discriminating monopolist fixes a low price and in the market with less elastic demand, he charges a high price.

4. Price Determination of Factors of Production:

The concept of elasticity for demand is of great importance for determining prices of various factors of production. Factors of production are paid according to their elasticity of demand. In other words, if the demand of a factor is inelastic, its price will be high and if it is elastic, its price will be low.

5. Demand Forecasting:

The elasticity of demand is the basis of demand forecasting. The knowledge of income elasticity is essential for demand forecasting of producible goods in future. Long- term production planning and management

depend more on the income elasticity because management can know the effect of changing income levels on the demand for his product.

6. Dumping:

A firm enters foreign markets for dumping his product on the basis of elasticity of demand to face foreign competition.

7. Determination of Prices of Joint Products:

The concept of the elasticity of demand is of much use in the pricing of joint products, like wool and mutton, wheat and straw, cotton and cotton seeds, etc. In such cases, separate cost of production of each product is not known.

Demand Forecasting:

Demand forecasting is a quantitative aspect of human resource planning. It is the process of estimating the future requirement of human resources of all kinds and types of the organisation.

Factors: Forecasting of demand for human resources depends on certain factors such as:

(1) Employment trend in the organisation for at least last five years to be traced to determine the future needs.

(2) Organisation has to find out the replacement needs due to retirement, death, resignation, termination etc.

(3) Improvement in productivity is yet another factor. To improve productivity organisation needs better employees with skills and potential. Productivity leads to growth but depends on the demands for the product of the enterprise in the market. Higher demand may lead to more employment of skilled personnel's.

(4) Expansion of the organisation leads to hiring of more skilled persons. The base of human resource forecast is the annual budget. Manufacturing plan depends upon the budget. Expansion in production leads to more hiring of skills and technology.

Methods of Demand Forecasting:

There are three major methods of demand forecasting. They are as follows.

(1) Executive Judgment: Executive or Managerial Judgment method is the most suitable for smaller enterprises because they do not afford to have work study technique. Under this method the executives sit together and determine the future manpower requirements of the enterprise and submit the proposal to the top management for approval. This approach is known as 'bottom up' approach.

(2) Work Load Forecasting: It is also known as work load analysis. Under this method the stock of workload and the continuity of operations are determined. Accordingly the labour requirement is determined. The workload becomes the base for workforce analysis for the forthcoming years. Here due consideration is given to absenteeism and labour turnover. This method is also known as work study technique. Here working capacity of each employee is calculated in terms of man-hours. Man-hours required for each unit is calculated and then number of required employees is calculated. This method is useful for long term forecasting.

(3) Statistical Techniques:

Long range demand forecasting for human resources is more responsive to statistical and mathematical techniques. With the help of computers any data is rapidly analyzed.

The following are the methods of forecasting used under this category:

(a) Ratio Trends Analysis:

Under this method the ratios are calculated for the past data related to number of employees of each category i.e. production, sales and marketing levels, work load levels. Future production and sales levels, work load, activity levels are estimated with an allowance of changes in organization, methods and jobs. The future ratios are estimated. Then future human resources requirement is calculated on the basis of established ratios. This method is easy to understand. Value depends upon accuracy of data.

(b) Econometric Models:

Econometric models are built up on the basis of analysis of past statistical data establishing the relationship between variables in a mathematical formula. The variables are those factors such as production, sales, finance and other activities affecting human resource requirement. Econometric model is used to forecast human resource requirements based on various variables.

(c) Bureks Smith Model:

Elmer Bureks and Robert Smith have developed a mathematical model for human resource forecasting based on some key variables that affects overall requirement for human resources of the organisation. They have given an equation.

$En = (Lagg + G) 1/x/ y$

Where En = Estimated level of demand for employees

Lagg = Turnover or overall current business activity

G = Total growth in business activity anticipated thought period 'n' in term of rupees

x = Average productivity improvement from today thought planning period.

y = Conversion figure relating today's overall activity to required employees.

This method is used when the values of G, x and y are accurate. To obtain the values of G, x and y different statistical techniques are used.

(d) Regression Analysis:

Regression analysis is used to forecast demand for human resources at some point of time in future by using factors such as sales, production services provided etc. This method is used when independent and dependent variables are functionally related to each other. Nowadays computers are used to solve regression equations for demand forecasting.

Supply Forecasting: Supply forecasting means to make an estimation of supply of human resources taking into consideration the analysis of current human resources inventory and future availability.

Existing Inventory: The first step in supply forecasting is to take a stock of existing HR inventory as follows.

(a) Head Count:

Count of the total number of people available department-wise, sex- wise, designation-wise, skill-wise, pay roll-wise etc.

(b) Job Family Inventory:

It consists to number and category of employees of each job family i.e. the jobs related to same category like office staff, sales and marketing staff, production staff, maintenance and industrial engineers, quality control engineers etc.

(c) Age Inventory:

It consists of age-wise number and category of employees. This gives us age composition of human resources. Dynamism, creative abilities innovativeness is present in young employees while making of proper judgment and display of maturity is shown by elderly employees. Organizations prefer both young and old employees. Human resource planning should give due consideration to age-wise human resource mixing young and old employees in due proportions.

(d) Inventory of skill, experience, values and capabilities:

Organisation should take a stock of present inventory of skill, employees with number of years of experiences (10 yrs, 15-yrs, 20 yrs and more etc.), values and capabilities.

(e) Inventory of Qualifications and Training:

This consists of educational qualifications of the employees academic and technical and special qualifications if any and the training received by the employees.

(f) Inventory of Salary grades:

This includes pay and allowance-wise and total emoluments-wise stock taking.

(g) Sex wise Inventory: Inventory of male and female employees of the organisation.

(h) Local and Non-Local-wise Inventory:
It includes the stock of local employees and the employees belonging to other areas such as different states of India.

(i) Inventory of Past Performance and Future Potentialities:
There are several human capacities or potentials required for performing jobs at the workplace. Requirement of these along experience need to be taken into consideration while taking stock of human resource inventory.

Labour Wastage: Labour wastage should be taken into account while making future forecast and find out the reasons of people leaving the organisation. Action can be taken to arrest the labour wastage and replacement of uncontrollable losses. HR manager must know how to make wastage analysis. For measuring permanent total loss due to labour the following labour turnover formula is used.Labour Turnover Rate = Number of Employees left specified period (Say one year)/ Average Number of Employees during the same period x 100

Sources of Supply: Estimation of supply of human resources depends upon internal and external sources.

Internal Factors: Internal source of supply of human resources include the output from established training programme for employees and management development programmes for executives and the existing reservoirs of skills, potentials, creative abilities of the organisation.

External Factors: External factors can be grouped into local and national factors.

(a) Local Factors: Local factors include the following:
(1) Population densities within the reach of enterprise.

(2) Current and future wage and salary structure from other employers.

(3) Local unemployment level.

(4) Availability of employees on part time, temporary and casual basis.

(5) The output from local educational institutions and training institutions managed by government and private establishments.

(6) Local transport and communication facilities.

(7) Availability of residential facilities.

(8) Traditional pattern of employment locally and availability of human resources with requisite qualifications and skills.

(9) The pattern of migration and immigration.

(10) The attraction of the area as a better place to reside.

(11) The attraction of a company as a better workplace and company as a good paymaster.

(12) The residential facilities, educational health and transport facilities.

(13) The regulations of local government in respect of reservation of backward and minorities communities.

(b) National Factors: National factors include the following:
(1) Trends in growth of working population of the country.

(2) National demands for certain categories of human resources such as technical and management professionals, computer professionals, medical practitioners,technicians,secretaries, craftsmen,graduates etc.

(3) The output from universities, technical and professional institutions.

(4) Impact of changes in educational patterns.   (5) Cultural patterns, social norms and customs.

(6) Impact of government training schemes.(7) Impact of government policies in respect of employment regulations.

(8) Migration and immigration patterns.   (9) Impact of national educational facilities.

The net human resource requirement depends upon the human resource requirement of the organization for future i.e. demand forecasting and the total supply of human resources available.