

Chapter-2

Demand and Supply Analysis

2.1.Demand Analysis

Demand refers to the quantity of a commodity that an individual consumer is willing to purchase at a given price within a specified period.

Conditions for Demand Existence: For demand to exist, three conditions must be fulfilled:

1. **Desire to Purchase:** The individual must have a desire or want for the commodity.
2. **Ability to Pay:** The individual must possess the financial means or ability to pay for the commodity.
3. **Willingness to Pay:** The individual must be willing to exchange the financial resources for the desired commodity.

Example: For instance, consider a beggar who may have a desire to purchase a car. However, the existence of demand is negated because the beggar lacks the ability to pay for it. Despite having the desire, the absence of financial means and willingness to pay renders the demand nonexistent.

Demand analysis is crucial in understanding consumer behavior and market dynamics, as it involves examining the factors influencing the quantity of a good or service that consumer are willing to purchase under specific circumstances.

Factors Affecting Demand:

1. **Price:** This is the most fundamental factor. Generally, as the price increases, the quantity demanded decreases (Law of Demand). There are exceptions, however, like luxury goods where a higher price can signify exclusivity and increase demand.
2. **Income:** Consumers with higher incomes tend to demand more goods and services, especially non-essential items.
3. **Consumer Preferences:** Tastes, trends, and demographics all influence what consumer's desire. A shift in preferences can significantly impact demand.
4. **Availability of Substitutes:** If close substitutes exist, a price increase for one good can lead consumers to switch, lowering demand for the original good.
5. **Complementary Goods:** Goods that are used together can influence each other's demand. For example, a rise in demand for printers might increase demand for ink cartridges.
6. **Consumer Expectations:** If consumers expect prices to rise in the future, they might purchase more now, increasing current demand.

Demand Analysis Techniques:

1. **Market Research:** Surveys, focus groups, and customer interviews can reveal consumer preferences and buying habits.
2. **Sales Data Analysis:** Historical sales data can show trends and patterns in demand.
3. **Econometric Modeling:** Statistical models can be used to quantify the relationship between demand and various factors.
4. **Competitor Analysis:** Understanding competitor offerings and strategies can provide insights into customer needs and potential demand for your products.

Applications of Demand Analysis:

1. **Product Development:** Businesses use demand analysis to identify potential markets and develop products that cater to specific needs.
2. **Pricing Strategies:** Understanding how price affects demand helps businesses set optimal pricing for profitability.
3. **Inventory Management:** By forecasting demand, businesses can ensure they have enough stock to meet customer needs without incurring excess inventory costs.
4. **Marketing and Advertising:** Targeting campaigns based on demand analysis can improve effectiveness and reach the right audience.

2.1.1. Demand Function

A demand function represents the relationship between the quantity demanded of a good or service and its determinants. It is a mathematical expression that illustrates how various factors influence the quantity demanded.

Formula: The most basic form of a demand function is:

$$Q_d = f(P, Y, P_{rg}, T)$$

- Q_d : Quantity demanded of the good or service
- P : Price of the good or service
- Y : Consumer income level
- P_{rg} : Prices of related goods (substitutes or complements)
- T : Consumer tastes and preferences

Interpretation: This formula states that the quantity demanded (Q_d) is a function (f) of several variables: price (P), income (Y), prices of related goods (P_{rg}), and consumer tastes (T). Changes in these factors will affect the quantity demanded.

Impact of Different Variables:

Price (P): The Law of Demand states that there's a negative relationship between price and quantity demanded (ceteris paribus - holding all other factors constant). As price increases, quantity demanded typically decreases.

Income (I): Generally, there's a positive relationship between income and quantity demanded for most goods (normal goods). For luxury goods, however, the relationship might be weaker or even negative (inferior goods).

Tastes and Preferences (T): Shifts in consumer preferences can significantly impact demand. For example, a sudden health trend might increase demand for fitness products.

Prices of Related Goods (P1...Pn): These can be substitutes (e.g., butter and margarine) or complements (e.g., printers and ink cartridges). A price increase for a substitute can increase demand for the original good.

2.1.2. Determinants of demand

The concept of demand goes beyond just price. Several factors influence how much of a good or service consumers are willing to purchase. Here's a detailed exploration of these determinants:

1. Price (P):

Law of Demand: This fundamental principle states that as the price of a good or service increases (holding all other factors constant), the quantity demanded generally decreases. This is because consumers have limited budgets and will substitute towards more affordable options or simply consume less.

2. Income (I):

Normal Goods: For most goods, there's a positive relationship between income and quantity demanded. As income rises, consumers have more money to spend, leading to increased demand for many products.

Inferior Goods: For some specific goods, like instant noodles, an increase in income might lead to a decrease in demand. Consumers may switch to higher-quality substitutes as their purchasing power improves.

3. Consumer Preferences (T):

Tastes, trends, and marketing all play a role in shaping consumer desires. A shift in preferences towards a particular product or service can significantly impact demand. For example, the rise of health consciousness might increase demand for fitness trackers.

4. Prices of Related Goods (Prg):

Substitutes: These are goods that can fulfill a similar need (e.g., tea and coffee). If the price of one substitute increases, the demand for the other may rise. Consumers might switch towards the more affordable option.

Complements: These are goods used together (e.g., printer and ink cartridges). If the price of a complement increases, the demand for the original good might decrease. Consumers may be less willing to buy the original good if the complementary product becomes expensive.

5. Population and Demographics (Pop, Demo):

The size and composition of the population can influence overall demand patterns. A larger population generally leads to higher total demand.

Age, income distribution, and other demographic factors can influence the demand for specific goods and services. For example, the demand for baby products might be higher in areas with a larger young population.

6. Expectations (Exp):

Consumer expectations regarding future prices, income changes, or other factors can influence current demand.

Expectation of Price Increases: If consumers anticipate a future price increase, they might purchase more now, increasing current demand to stock up.

Expectation of Income Increases: Conversely, if they expect their income to increase in the future, they might delay purchases, decreasing current demand as they wait for more buying power.

7. Other Factors (O):

Availability of credit can influence demand for some products, especially durable goods. Easier access to credit might encourage more purchases.

Government policies like taxes, subsidies, and regulations can also affect demand.

Understanding these determinants is crucial for:

Businesses: They can use this knowledge to develop pricing strategies, predict market trends, and target marketing efforts effectively.

Policymakers: They can use it to design policies that stimulate or regulate demand for specific goods and services.

Economists: They can use it to analyze market behavior, forecast economic trends, and develop economic models.

2.1.3. Law of Demand

The Law of Demand is a fundamental principle in economics that describes the inverse relationship between the price of a good or service and the quantity demanded by consumers. In other words, as the price of a commodity decreases, the quantity demanded increases, and vice versa.

Alfred Marshall stated: "The greater the amount to be sold, the smaller must be the price at which it is offered in order that it may find purchasers."

Prof. Samuelson defined it as: "Law of Demand states that people will buy more at lower prices and buy less at higher prices, if other things remain the same."

Prof. Marshall's perspective: "The Law of Demand states that the amount demanded increases with a fall in price and diminishes when the price increases."

Ferguson's interpretation: "According to the law of demand, the quantity demanded varies inversely with price."

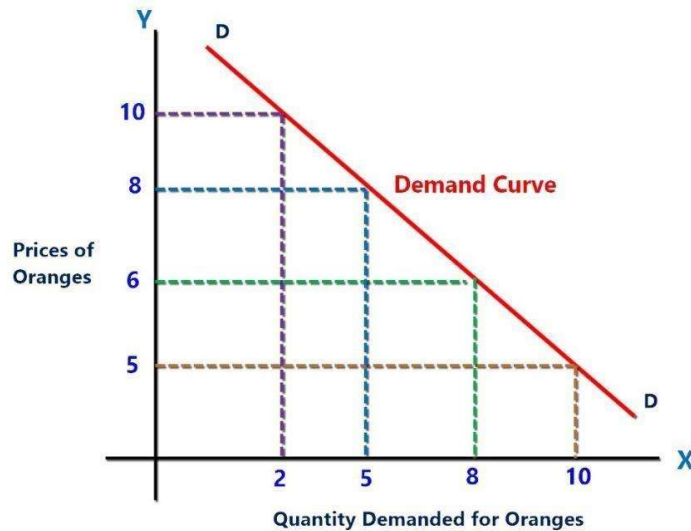
Characteristics of the Law of Demand

1. **Inverse Relationship:** There is an inverse relationship between the price of a commodity and its demand.
2. **Price as an Independent Variable:** In this relationship, the price is considered the independent variable.
3. **Demand as a Dependent Variable:** The quantity demanded is the dependent variable, influenced by changes in the price of goods.

Demand Schedule

Prices of Oranges	Quantity of oranges demanded at specific prices
10	5
8	8
6	8
5	10

DEMAND CURVE (graphical presentation of law of demand)



Source: <http://www.thetutoracademy.com/course-category/economics/>.

Demand Curve: The demand curve graphically represents the Law of Demand using the quantity demanded for oranges on the X-axis and the price of oranges on the Y-axis. As per the provided schedule:

The demand for oranges is 10 when the price is 5/-

The demand decreases from 8 to 2 as the price increases from 8 to 10/-

This reflects the inverse relationship between the price of oranges and the quantity demanded, adhering to the Law of Demand.

Assumptions: The Law of Demand operates under specific assumptions:

1. **Constant Habits, Tastes, and Fashions:** Assumes that consumer preferences and trends remain constant.
2. **Stable Income:** Assumes no change in the income of consumers.
3. **Constant Prices of Other Goods:** Assumes prices of other goods in the market remain unchanged.
4. **No Substitutes:** Assumes the commodity in question has no substitutes.
5. **Normal Good:** Assumes the commodity is a normal good with no prestige or status value.
6. **Expectations:** Assumes consumers do not expect changes in prices.

Exceptions to Law of Demand

1. **Giffen Goods or Giffen Paradox:**

Giffen goods are inferior goods for which demand increases as the price rises. One classic example is staple foods for certain income groups. When the price of such goods (e.g., bread) increases, consumers, who are already constrained by their income, may cut back on more expensive items (like meat) and buy more of the relatively cheaper staple, leading to an increase in demand for the cheaper good.

Example: During an economic downturn, if the price of rice (a staple for a lower-income group) increases, individuals may reduce consumption of more expensive foods and buy more rice, despite the higher price.

2. Goods of Status:

Certain commodities are demanded not solely for their utility but for the status or prestige they confer. As the price of these goods increases, their demand may rise because they become more desirable as status symbols.

Example: Luxury goods like designer handbags, high-end watches, or luxury cars often experience increased demand as their prices rise because consumers perceive them as symbols of wealth and status.

3. Ignorance:

Consumers may sometimes associate higher prices with higher quality, even when that is not the case. This perception can lead to increased demand for a product as its price rises.

Example: If consumers believe that a more expensive brand of bottled water is of superior quality, they may choose to buy more of it despite the higher price.

4. Consumer Expectations of Future Prices:

Consumer expectations about future price changes can influence current demand. If consumers anticipate a future price increase, they may buy more of a commodity now, leading to an increase in demand.

Example: Ahead of an announced increase in gasoline prices, consumers may rush to fill up their tanks, anticipating higher prices in the near future.

5. Fear of Shortage:

During times of perceived scarcity or emergency, consumers may expect shortages of certain goods. This expectation can lead to increased demand, even at higher prices, as individuals stock up to ensure they have an adequate supply in the future.

Example: In the face of a natural disaster, people might buy more bottled water at higher prices, fearing a shortage of clean water.

6. Necessaries:

In the case of essential goods like rice or vegetables, demand may not always decrease with an increase in price. These items are considered necessities, and consumers may continue to buy them even at higher prices.

Example: If the price of essential medicines increases, individuals may still purchase them because they are necessary for their health and well-being.

2.1.4. Types of Demand

Demand isn't a one-size-fits-all concept. There are various classifications based on the good or service and its relationship with other factors.

Concept of Demand: In economics, demand refers to the quantity of a good or service that a consumer is both willing and able to purchase at different price levels during a specified time period. It is distinct from mere desire, as demand implies both the desire and the ability to spend with sufficient purchasing power.

Four Essential Elements of Demand:

Quantity of the commodity: The amount of the good or service that consumers are willing to purchase.

Willingness of a consumer to purchase the commodity: The consumer's intention and inclination to buy.

Time period: The specific duration during which the demand is considered.

Price of the commodity at each quantity level: The relationship between the price of the commodity and the corresponding quantity demanded.

Types of demand:

1. Individual Demand vs. Market Demand:

Individual Demand: This refers to the demand for a specific good or service by a single consumer. It considers how much of that good/service a particular consumer is willing to buy at different prices, keeping other factors constant.

Market Demand: This represents the total demand for a good or service within a specific market at a given time. It's the sum of the individual demands of all consumers in that market.

2. Price Demand:

This focuses on the relationship between the price of a good or service and the quantity demanded; assuming all other factors remain constant (follows the Law of Demand). It's typically analyzed using a demand curve, which shows how price changes affect the quantity demanded.

3. Income Demand:

This explores how a change in consumer income affects the quantity demanded of a good or service, with price and other factors held constant. As discussed earlier, income has a positive relationship with demand for normal goods and a negative relationship for inferior goods.

4. Direct Demand vs. Derived Demand:

Direct Demand: This refers to the demand for goods or services that satisfy a consumer's needs or wants directly. For example, the demand for food, clothing, or entertainment falls under direct demand.

Derived Demand: This refers to the demand for goods or services that are used to produce other goods or services. The demand for these goods is derived from the demand for the final product. For instance, the demand for steel (used in cars) is derived from the demand for cars.

5. Joint Demand:

This refers to the demand for two or more goods that are consumed together and derive their utility from being used together. The demand for one good is heavily influenced by the price and availability of the other. Examples include peanut butter and jelly or a left shoe and a right shoe.

6. Composite Demand:

This refers to the demand for a good or service that can be used for various purposes. The overall demand for such a good is a combination of the demand for each individual use. For example, the demand for electricity can come from households, businesses, and industries for various purposes.

7. Elastic vs. Inelastic Demand:

Elastic Demand: This refers to situations where a change in price leads to a significant change in the quantity demanded. In other words, consumers are very responsive to price changes. Examples include luxury goods or travel.

Inelastic Demand: This refers to situations where a change in price has a relatively small impact on the quantity demanded. Consumers are less responsive to price changes. Examples include essential goods like insulin or gasoline.

2.2. Elasticity of Demand

"Elasticity of demand refers to the extent of responsiveness of the quantity demanded of a commodity to a change in its price or any other influencing factor."The demands for some commodities are receptive to the change in its price, while the demands for others are not so receptive to the price changes. The price elasticity of demand is the quantity of the receptiveness of the demand for a commodity to change in its price. The price elasticity of demand for a commodity is defined as the percentage of change in demand for the commodity divided by the percentage change in its price. The price elasticity of demand for a good is derived as follows:

Elasticity of demand = Percentage change in demand for the goods ÷ Percentage change in price for the goods

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”

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”.

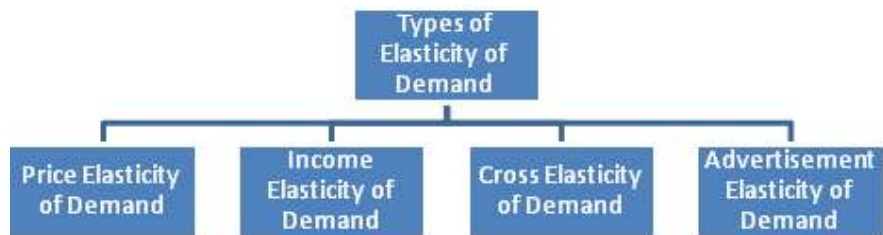
Interpreting the Elasticity Coefficient:

Ed > 1: This indicates elastic demand. A small price increase leads to a larger decrease in quantity demanded, and vice versa.

Ed < 1: This indicates inelastic demand. A price change has a proportionally smaller impact on quantity demanded.

Ed = 1: This represents unit elastic demand. A price change is met with an equal proportional change in quantity demanded.

2.2.1. TYPES OF ELASTICITY



Price Elasticity of Demand:

The percentage change in quantity demanded divided by the percentage change in price. It is a measure that helps us understand how much the quantity demanded of a good or service responds to a change in its price.

The formula for price elasticity of demand (PED) is given by:

$$E_p = \frac{\text{Proportionate change in Quantity Demanded}}{\text{Proportionate change in Price}}$$

$$PED = \frac{(Q_2 - Q_1) / Q_1}{(P_2 - P_1) / P_1}$$

Q1= Quantity demanded before the price change.

Q2= Quantity demanded after the price change.

P1= Price before the change.

P2= Price after the change.

Interpretation: If $PED > 1$, demand is elastic (consumers are responsive to price changes). If $PED < 1$, demand is inelastic (consumers are less responsive to price changes).

Income Elasticity of Demand:

The degree of responsiveness of a change in demand for a product due to the change in the income is known as income elasticity of demand.

The formula to compute the income elasticity of demand is:

$$E_p = \frac{\text{Proportionate change in Quantity Demanded}}{\text{Proportionate change in Income}}$$

$$PED = \frac{(Q2-Q1)/Q1}{(I2-I1)/I1}$$

Q1 = Quantity demanded before the price change.

Q2 = Quantity demanded after the price change.

I1 = Income before the change.

I2 = Income after the change.

Interpretation: If $YED > 0$, the good is a normal good (demand increases with income). If $YED < 0$, the good is inferior (demand decreases with income).

Cross Elasticity of Demand:

The cross elasticity of demand refers to the change in quantity demanded for one commodity as a result of the change in the price of another commodity. This type of elasticity usually arises in the case of the interrelated goods such as substitutes and complementary goods.

The cross elasticity of demand for goods X and Y can be expressed as:

$$E_p = \frac{\text{Proportionate change in Purchase of Commodity X}}{\text{Proportionate change in the Price of Commodity Y}}$$

$$PED = \frac{(Q2^A-Q1^A)/Q1^A}{(P2^B-P1^B)/P1^B}$$

Where Q1A and Q2A are the initial and final quantities demanded of good A, and P1B and P2B are the initial and final prices of good B, respectively.

The two commodities are said to be complementary, if the price of one commodity falls, then the demand for other increases, on the contrary, if the price of one commodity raises the demand for another commodity decreases. For example, petrol and car are complementary goods.

While the two commodities are said to be substitutes for each other if the price of one commodity falls, the demand for another commodity also decreases, on the other hand, if the price of one commodity rises the demand for the other commodity also increases. For example, tea and coffee are substitute goods.

Advertising Elasticity of Demand: The responsiveness of the change in demand to the change in advertising or rather promotional expenses is known as advertising elasticity of demand. In other words, the change in the demand as a result of the change in advertisement and other promotional expenses is called as the advertising elasticity of demand.

It can be expressed as:

$$E_p = \frac{\text{Proportionate change in Quantity Demanded}}{\text{Proportionate change in Advertising Expenditure}}$$

$$PED = \frac{(Q2-Q1)/Q1}{(A2-A1)/A1}$$

Q1= Quantity demanded before the price change.

Q2= Quantity demanded after the price change.

A1= Advertising spending before the change.

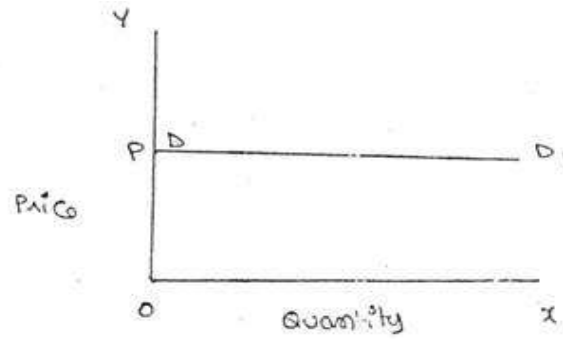
A2= Advertising spending after the change.

2.2.2. Measurement of elasticity of demand

1. Perfectly elasticity of demand
2. Perfectly inelasticity of demand
3. Relatively elasticity of demand
4. Relatively inelasticity of demand
5. Unity elasticity of demand

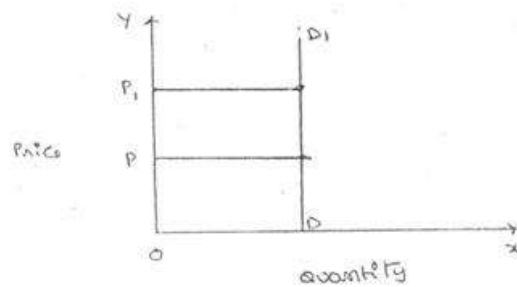
Perfectly elasticity of demand

When any quantity can be sold at a given price, and when there is no need to reduce price, the demand is said to be perfectly elastic. In such cases, even a small increase in price will lead to complete fall in demand.



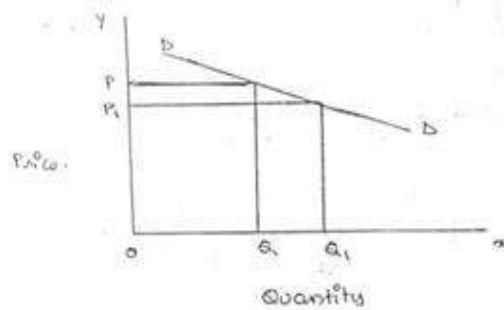
Perfectly inelasticity of demand

When a significant degree of change in price leads little or no change in the quantity demanded, then the elasticity is said to be perfectly inelasticity. In other words, the demand is said to be perfectly inelasticity when there is no change in the quantity demanded even though there is a big change in the price



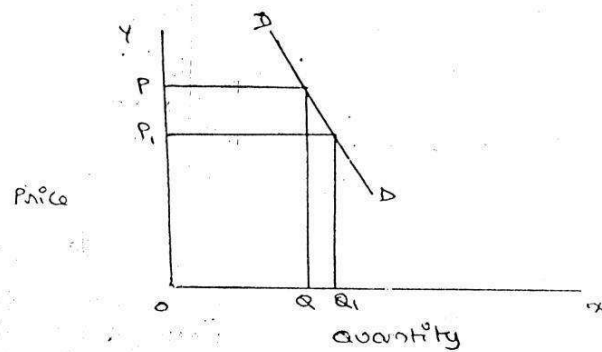
Relatively elasticity of demand

The demand is said to be relatively elasticity when the change in demand is more than the change in the price.



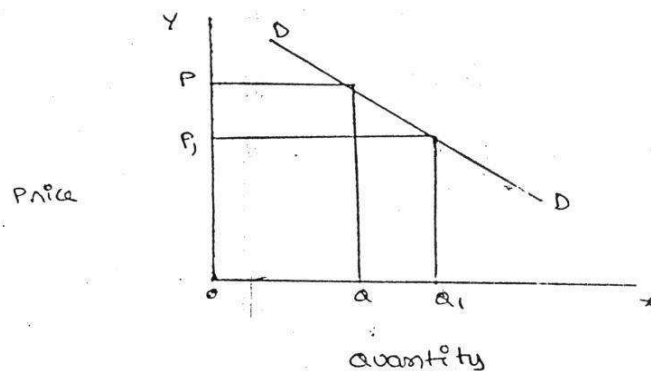
Relatively inelasticity of demand

The demand is said to be relatively inelasticity when the change in demand is less than the change in the price.



Unit elasticity

The elasticity in demand is said to be unity when the change in demand is equal to the change in price.



2.2.3. Factors effecting elasticity of demand

Understanding how responsive consumers are to price changes (elasticity of demand) is crucial for businesses and economists. Here's a deeper dive into the factors that significantly affect elasticity:

1. Availability of Close Substitutes:

High Availability: If there are readily available substitutes (e.g., tea and coffee), demand tends to be more elastic. When the price of one good increase, consumers can easily switch to the substitute, reducing demand for the original good.

Limited Availability: If there are few or no close substitutes (e.g., insulin for diabetics), demand tends to be more inelastic. Consumers have no choice but to buy the good even if the price increases, within a reasonable range.

2. Necessity of the Good:

Essential Goods: Goods considered necessities, like food and medicine, typically have inelastic demand. People need them regardless of price fluctuations within a reasonable range. Even if the price of bread increases, people will still need to buy it.

Non-Essential Goods: Goods that are not essential for survival, like luxury items or entertainment, generally have more elastic demand. Consumers might be more willing to forgo them if the price increases significantly. For example, a rise in concert ticket prices might lead many people to decide not to attend.

3. Proportion of Income Spent on the Good:

High Proportion: If a good represents a significant portion of a consumer's budget (e.g., rent), demand tends to be more inelastic. Consumers might have limited flexibility to reduce consumption even with a price increase.

Low Proportion: If a good represents a small portion of a consumer's budget (e.g., candy bar), demand tends to be more elastic. Consumers can more easily adjust their consumption or find substitutes if the price increases.

4. Time Horizon:

Short Run: In the short run, demand might be more inelastic as consumers have limited options to adjust their consumption habits. They might be stuck with using existing products or services even if the price goes up.

Long Run: In the long run, with more time to adapt, demand might become more elastic. Consumers can explore substitutes, find cheaper alternatives, or adjust their consumption patterns entirely. For example, if gas prices rise sharply in the short run, people might still rely on their cars. However, in the long run, they might consider buying a more fuel-efficient car or using public transportation.

5. Degree of Product Differentiation:

Highly Differentiated: If a product has a unique brand identity or specific features (e.g., a specific brand of athletic shoes), demand might be less elastic. Consumers might be loyal to the brand and less likely to switch to substitutes even with a price increase.

Low Differentiation: If a product is a commodity with minimal differentiation (e.g., generic sugar), demand tends to be more elastic. Consumers can easily switch to similar products from other brands if the price of one brand increases.

Understanding these factors empowers businesses and policymakers to:

Develop Effective Pricing Strategies: Businesses can set prices that maximize profits by considering the elasticity of demand for their products. For elastic goods, small price adjustments might be more effective than large ones.

Craft Targeted Marketing Campaigns: Knowing the elasticity of demand helps businesses tailor their marketing messages. For inelastic goods, focusing on brand loyalty and value proposition might be more important than price promotions.

Design Informed Tax Policies: Policymakers can use elasticity to assess the impact of taxes on consumption. Inelastic goods might be better suited for higher taxes as the demand change is minimal.

2.2.4. Significance of Elasticity of Demand

Elasticity of demand isn't just a theoretical concept; it's a powerful tool with significant practical implications across various sectors. Here's a breakdown of its importance for businesses, policymakers, and consumers:

For Businesses:

1. **Pricing Strategies:** Elasticity is crucial for setting optimal prices. For elastic goods, small price adjustments might be more effective than large ones. Conversely, for inelastic goods, businesses can maintain higher profit margins without significantly impacting sales.
2. **Product Development:** Understanding elasticity can guide product development. Businesses can focus on creating differentiated products with less elastic demand (loyal customer base) or develop cost-effective alternatives for highly elastic goods.
3. **Marketing and Advertising:** Knowing elasticity helps in crafting targeted marketing campaigns. For elastic goods, emphasizing value propositions and highlighting features might be more effective than solely focusing on price.
4. **Inventory Management:** Elasticity can inform inventory management strategies. Businesses can avoid overstocking on elastic goods that might face reduced demand with price increases.

For Policymakers:

1. **Taxation:** Elasticity can guide tax policy decisions. Inelastic goods might be better suited for higher taxes as the demand change is minimal. This can be a source of revenue for the government with minimal impact on consumers.
2. **Market Regulation:** Understanding elasticity helps policymakers assess the impact of regulations on specific industries. Regulations might have a larger effect on the price and availability of goods with inelastic demand.
3. **Consumer Protection:** Policymakers can use elasticity to design policies that protect consumers, especially for essential goods with inelastic demand. This could involve price controls or subsidies to ensure affordability.

For Consumers:

1. **Informed Purchasing Decisions:** Understanding elasticity empowers consumers to make informed purchasing decisions. By recognizing elastic goods, they can be more flexible with brands and shop around for better deals.
2. **Substitution Strategies:** Consumers can leverage elasticity by identifying substitutes for elastic goods. This allows them to maintain their desired level of consumption even if prices fluctuate.
3. **Price Sensitivity Awareness:** Knowing their own sensitivity to price changes (elasticity of their demand) allows consumers to prioritize their spending and potentially save money.

2.3. Demand Forecasting

Demand forecasting is a crucial practice in business economics, aiming to estimate the future demand for a product or service. It's like peering into a crystal ball to anticipate how much of your offerings customers will want in the coming days, weeks, months, or even years. Accurate forecasts empower businesses to make informed decisions across various aspects:

Why is Demand Forecasting Important?

1. **Production Planning:** By anticipating demand, businesses can ensure they have enough stock to meet customer needs without incurring excess inventory costs. Imagine a clothing store that overestimates demand for winter coats before a mild winter. They might be stuck with unsold inventory and lose profits.
2. **Pricing Strategies:** Demand forecasts can inform pricing decisions. If a high demand is expected, businesses might adjust prices strategically to maximize profits. Conversely, if demand is predicted to be low, businesses might consider promotional pricing to stimulate sales.
3. **Supply Chain Management:** Knowing the anticipated demand helps businesses manage their supply chain effectively. They can order raw materials, forecast labor needs, and optimize logistics to ensure smooth production and delivery.
4. **Marketing and Advertising:** Demand forecasts can guide marketing and advertising campaigns. Businesses can target their efforts towards periods of high demand or focus on promoting products with lower-than-anticipated demand.
5. **Financial Planning:** Accurate forecasts can help businesses develop realistic financial projections. They can budget for expenses, anticipate revenue streams, and make informed investment decisions.

2.3.1. Characteristics of Good Demand forecasting

why is Demand Forecasting Crucial for Business?

Demand forecasting is an essential tool for businesses. It tells you what customers want and How much they are willing to pay for it. This information can help companies make better

Pricing, production, and inventory decisions. Additionally, demand forecasting can help you anticipate future trends that may impact your business. Here are some of the significant reasons why demand forecasting is indispensable for businesses of all sizes:

Improves Planning

The primary objective of demand forecasting is to help businesses improve their planning. By understanding future demand, businesses can make better production, inventory and pricing decisions. This improved planning can lead to increased profits and decreased costs.

Helps Manage Inventory

Demand forecasting is vital to ensuring that a company has the proper inventory levels to meet customer demand. If demand is high, businesses can increase production to meet customer demand. Conversely, if demand is low, companies can reduce production to avoid excess inventory. It will save money on inventory costs and keep customers happy.

Helps Rectify Errors

Demand forecasting can help businesses to avoid making inaccurate assumptions about demand. This, in turn, can help businesses to rectify errors in their planning and production processes. With an accurate demand forecast, businesses can avoid making costly errors that could negatively impact their bottom line.

Informs Long-Term Business Planning

Not only can demand forecasting help businesses avoid making errors in the short term, but it can also inform long-term business planning. An accurate demand forecast can help businesses make more informed decisions about their long-term growth strategy. This, in turn, can help businesses to achieve their long-term goals and objectives.

Helps Businesses to Stay Ahead of the Competition

In today's highly competitive business environment, businesses need to stay ahead of the competition. With efficient demand forecasting in place, businesses can better understand their customers' needs and wants. Companies can easily anticipate changes in demand and adjust their plans accordingly.

Benefits of a Good Demand Forecast:

By incorporating these characteristics, businesses can reap numerous benefits:

1. **Optimized Inventory Management:** Prevents stockouts and reduces the risk of holding excess inventory.
2. **Enhanced Production Planning:** Ensures production aligns with anticipated demand, avoiding inefficiencies and waste.

3. **Effective Pricing Strategies:** Allows businesses to adjust prices based on expected demand to maximize profits.
4. **Targeted Marketing and Advertising:** Helps businesses focus their marketing efforts on periods of high demand or products with lower-than-anticipated demand.
5. **Improved Financial Planning:** Enables businesses to develop realistic financial projections and make informed investment decisions.

2.3.2. Steps in Demand Forecasting

Demand forecasting is a crucial process for businesses, but how exactly do you go about creating a reliable forecast?

Key steps involved:

1. Define the Objective and Scope:

What are you forecasting? Is it demand for a specific product, a product category, or the overall business?

What time horizon are you interested in? Short-term (days, weeks) for production planning or long-term (months, years) for strategic decision-making?

2. Gather and Analyze Data:

Collect historical sales data, considering factors like seasonality, promotions, and economic trends. Analyze the data to identify patterns and trends. Techniques like moving averages or exponential smoothing can be used. Gather external data like market research reports, competitor analysis, and economic indicators.

3. Choose a Forecasting Method:

There's no one-size-fits-all approach. The chosen method depends on factors like data availability, product type, and desired accuracy. Here are some common methods:

1. **Historical Data Analysis:** This uses past sales data to project future demand based on identified trends.
2. **Market Research:** Surveys, focus groups, and competitor analysis can provide insights into customer preferences and market trends.
3. **Expert Judgment:** Leveraging the knowledge and experience of industry experts can be helpful, especially for new products or when historical data is limited.
4. **Econometric Models:** These are complex mathematical models that take into account various economic factors to predict demand. They require advanced expertise and significant data.
5. **Causal Relationships:** Consider factors that might influence demand, like economic conditions, seasonality, or marketing campaigns.

4. Develop the Forecast:

Apply the chosen method(s) to your data and external information to generate a demand forecast. The forecast should be specific, providing a clear picture of demand by product, region, customer segment, or other relevant variables.

5. Validate and Refine the Forecast:

Evaluate the accuracy of the forecast by comparing it with actual sales data. Identify any biases or errors in the forecasting model. Refine the model as needed based on new data or changing market conditions.

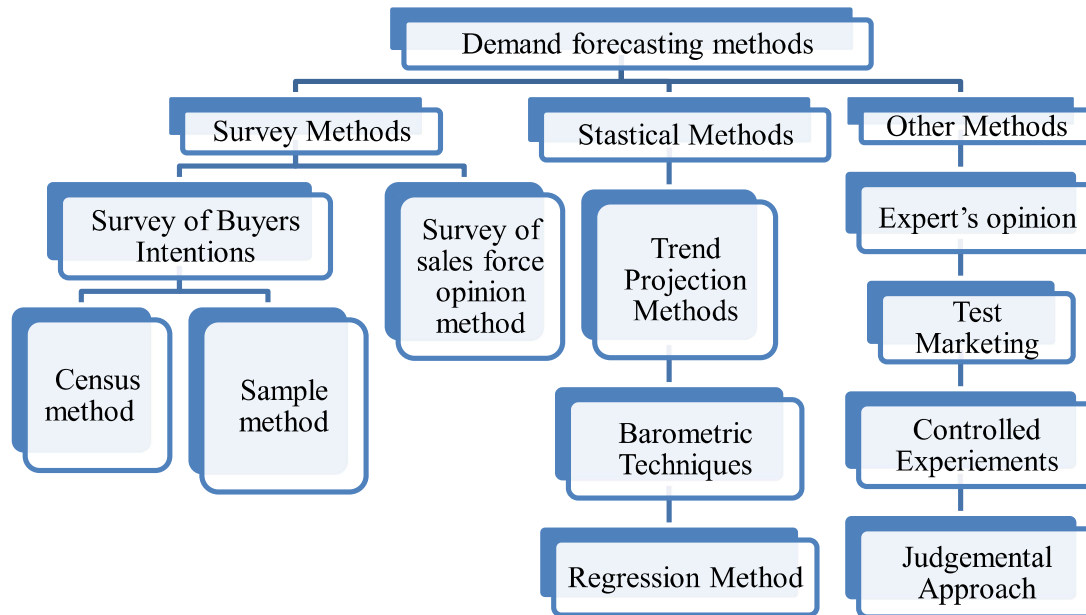
6. Monitor and Update the Forecast Regularly:

Demand is not static. Regularly monitor the market and update the forecast as new data becomes available or market conditions change. Scenario planning, considering different possibilities (best-case, worst-case), can help businesses prepare for a range of outcomes.

2.3.3. Methods of Demand Forecasting

Several methods are employed for forecasting demand. All these methods can be grouped under survey method, statistical method and other methods. Survey methods and statistical methods are further subdivided into different categories.

"While demand forecasting is not 100% accurate, combining various forecasting methods can enhance accuracy and reduce a significant number of errors."



Survey Method:

A. Survey of Buyers' Intention:

To predict the actions buyers might take under specific circumstances, an invaluable source of information is the buyers themselves. Creating a list of potential buyers and approaching each one to inquire about their planned purchase of a given product at a particular point in time under specific conditions is a practical approach.

Census Method:

If a company aims to gather opinions from all buyers, it adopts the census method. While comprehensive, this approach is both time-consuming and expensive. For instance, if a product has 10,000 buyers, obtaining the opinions of all ten thousand customers is referred to as the census method.

Examples:

If a Smartphone company wishes to gather the opinions of all its customers regarding a new model, reaching out to each of the 10,000 buyers individually represents a census method.

Sample Method:

When a company selects a representative group of buyers to reflect the entire population, it utilizes the sample method. Conducting a survey of buyers based on a sample basis is faster and more cost-effective. Typically, a questionnaire is designed to collect information, and specialized.

Examples:

A cosmetic company may select a diverse group of consumers to represent the broader population and gather insights on their preferences through a well-designed questionnaire.

B. Sales Force Opinions:

Sales personnel, being in constant contact with the main and large buyers in a specific market, serve as another valuable source of information regarding potential product sales. The sales force can swiftly assess likely customer reactions in their territories based on the company's strategy. This method is cost-effective as surveys can be conducted instantaneously through means like telephone, fax, video-conference, etc. The data collected from the sales force constitutes another reliable source of information.

Examples:

In the automobile industry, sales representatives can quickly gauge customer responses to a new pricing strategy through instant surveys conducted via telephone or video-conference.

Statistical Methods:

Statistical methods are employed for long-term forecasting, utilizing statistical and mathematical techniques based on historical data.

A. Trend Projection Methods:

Trend Line by Observation:

This straightforward method involves plotting actual sales data on a chart and estimating the trend line through observation. The line is extended towards the future, and sales forecasts are read from the graph.

Least squares method:

Here, certain statistical formulas are used to find the trend line which best fits the available data. It is assumed that there is a proportional change in sales over period of time. In such a case, the trend line equation is in linear form.

The estimating linear trend equation of sales is written as: $S = x + y(T)$, where x and y have been calculated from past data, S is sales and T is the year number for which the forecast is made. To find the values of x and y , the following equations have to be used.

$$\Sigma S = Nx + y\Sigma T$$

$$\Sigma ST = x\Sigma T + y\Sigma T^2$$

Where S is the sales; T is the year number, N = number of years.

Time Series Analysis:

Time series forecasting involves using a model to predict future values based on previously observed values. This method relies on statistical data collected, observed, or recorded at successive intervals of time. The set of observations at different points in time is referred to as a time series. Components often present in time series data include:

Secular Trend (T): Long-term trend.

Seasonal Trend (S): Regular patterns that repeat at fixed intervals.

Cyclical Trend (C): Periodic fluctuations related to the business cycle (e.g., prosperity, decline, depression, improvement).

Irregular Trend (I): Random variations or unexpected events.

The equation for time series analysis is:

$$Y=T+S+C+I$$

The constants T , S , C , and I are calculated from past data.

Moving Average Method:

The Moving Average Method is a time-series forecasting technique that considers the average of past events to predict future values. As the name suggests, this method involves calculating an average that moves over time, depending on the number of years selected. The primary purpose is to smooth out fluctuations in data and identify trends.

How the Moving Average Method Works:

Select a Time Period:

Decide on the number of periods (years, months, etc.) over which the moving average will be calculated. This is known as the "window" or "order" of the moving average.

Calculate the Average:

For each point in time, calculate the average of the data points within the chosen time period.

Shift the Average:

As new data becomes available, update the average by removing the oldest data point and adding the most recent one. This maintains a moving or rolling average.

Example:

Let's consider monthly sales data for a product over the past 12 months:

Month	Sales
Jan	120
Feb	130
Mar	110
Apr	140
May	150
Jun	130
Jul	160
Aug	170
Sep	180
Oct	200
Nov	190
Dec	210

Now, suppose we want to use a 3-month moving average to forecast future sales.

Calculate Moving Averages:

For March, the moving average is $(120 + 130 + 110) / 3 = 120$.

For April, the moving average is $(130 + 110 + 140) / 3 = 126.67$.

Continue this process for each subsequent month, considering the most recent three months.

Shift the Average:

For May, the moving average is $(110 + 140 + 150) / 3 = 133.33$.

Continue shifting the average with each new month's data.

The moving average smoothens out the month-to-month variations and highlights trends. In this example, if there is a general upward trend, the moving average will reflect this by gradually increasing over time. This method is beneficial for identifying underlying patterns in data and can be particularly useful in scenarios where random fluctuations are present.

Exponential Smoothing:

Exponential smoothing is a widely used technique for short-run forecasting, especially in scenarios where recent data is more relevant than distant past values. Unlike the moving average method, exponential smoothing assigns varying weights to all time periods, with higher weights given to more recent data points. This method is particularly effective in capturing trends and responding quickly to changes in the data.

Exponential Smoothing Formula:

$$Y_t = \alpha X_t + (1 - \alpha) Y_{t-1}$$

Where:

Y_t is the forecast for the next period.

α is the smoothing constant ($0 < \alpha < 1$).

X_t is the actual value for the current period.

Y_{t-1} is the forecast for the previous period.

How Exponential Smoothing Works:**Initialize the Forecast:**

Start with an initial forecast value, often based on the first actual data point.

Calculate the Forecast:

For each subsequent period, calculate the forecast using the exponential smoothing formula.

Update Weights:

Adjust the weights based on the smoothing constant α . Higher α values give more weight to recent data, making the forecast more responsive to changes.

Barometric Techniques:

Barometric techniques involve using one set of data to predict another set, essentially employing a relevant indicator (barometer) to forecast future demand for a specific product or service. This approach is based on the premise that certain indicators can serve as leading indicators or predictors of future demand trends.

How Barometric Techniques Work:

Identify Barometers:

Choose relevant indicators or barometers that have demonstrated a historical correlation with the demand for the target product or service.

Analyze Relationships:

Investigate and establish the historical relationship between the selected barometers and the demand for the product or service. This involves studying how changes in the barometers correlate with subsequent changes in demand.

Forecast Using Barometers:

Utilize the information from the identified barometers to make predictions about future demand. If the barometers exhibit certain patterns or trends, these can be considered as early signals of potential changes in demand.

Example:

Consider a cable TV provider aiming to forecast future demand for its services. The company might employ a barometric technique by using the number of new houses occupied in a given area as a relevant indicator or barometer.

Regression Method:

In the regression method, the demand function for a product is estimated, where the demand serves as the dependent variable, and other factors influencing demand act as independent variables. This method is employed when there is a need to analyze and quantify the relationships between the demand for a product and the various factors affecting it.

Types of Regression:

Simple Regression:

In a single variable demand function, only one independent variable, such as price, affects the demand. Simple regression involves studying the relationship between two variables, one being independent, and the other being the dependent variable.

Multiple Regressions:

When demand is influenced by multiple variables, multi-regression techniques are used. This allows for a more comprehensive analysis of the simultaneous impact of various factors on demand.

Regression Equation:

The general form of a regression equation is given as:

$$Y=a+bX$$

Where:

Y is the dependent variable (demand).

X is the independent variable (e.g., price).

a is the intercept, representing the value of Y when X is zero.

b is the slope, indicating the change in Y for a one-unit change in X.

Calculation of Coefficients (a & b):

The coefficients a and b are calculated using the following equations:

$$\Sigma Y=Na+b\Sigma X$$

$$\Sigma XY=a\Sigma X+b\Sigma X^2$$

How Regression Works:

Data Collection:

Gather historical data on the dependent variable (demand) and independent variables (e.g., price, advertising expenses).

Model Estimation:

Use statistical techniques to estimate the coefficients a and b based on the historical data. This involves finding the line that best fits the data points.

Prediction:

Once the coefficients are determined, the regression equation $Y=a+bX$ can be used to forecast future demand. For a given value of X (e.g., a specific price), the corresponding Y (demand) can be predicted.

Other Methods

Expert's opinion:

Well-informed persons are called experts. Experts constitute yet another source of information. These persons are generally the outside experts and they do not have any vested interests in the results of a particular survey.

Test marketing:

It is likely that opinions given by buyers, salesmen or other experts may be, at times, misleading. This is the reason why most of the manufacturers favour to test their product or service in a limited market as test-run before they launch their products nationwide. Based on the results of test marketing, valuable lessons can be learnt on how consumers react to the given product and necessary changes can be introduced to gain wider acceptability. To forecast the sales of a new product or the likely sales of an established product in a new channel of distribution or territory, it is customary to find test marketing in practice.

Controlled experiments:

Controlled experiments refer to such exercises where some of the major determinants of demand are manipulated to suit to the customers with different tastes and preferences, income groups, and such others. It is further assumed that all other factors remain the same. In this method, the product is introduced with different packages, different prices in different markets or same markets to assess which combination appeals to the customer most.

Judgment approach:

When none of the above methods are directly related to the given products or services, the management has no alternative other than using its own judgment.

2.4. Supply Analysis

In economics, we have two forces: the producer, who makes things, and the consumer, who buys them. Supply is the producer's willingness and ability to supply a given good at various price points, holding all else constant. An increase in price will increase producers' revenues, so they'll be willing to supply more; a decrease in price will reduce revenues, and so producers will supply less.

Supply refers to the amount of commodity which an individual producer is willing to sell at a given price in a given period of time.

Supply analysis is a fundamental concept in economics that examines the factors affecting the quantity of a good or service that producers are willing and able to sell at different price points. Understanding these factors empowers businesses to make informed decisions about production, pricing, and overall market strategy.

2.4.1. Determinants of supply

In economics, understanding the factors that influence the willingness and ability of producers to sell goods and services is crucial. These factors, known as the determinants of supply, play a vital role in shaping market dynamics and product availability. Here's a breakdown of the key elements that affect supply:

1. Price of the Good:

- a. **The Core Principle:** This is the most fundamental determinant of supply. The law of supply states that, with all other factors held constant, as the price of a good or service increases, the quantity supplied by producers will generally also increase.
- b. **Why it Matters:** Higher prices incentivize producers. They are more likely to allocate more resources to production (labor, materials, etc.) if they can expect a higher return on their investment. This leads to a greater quantity of goods or services being offered for sale.

2. Input Costs:

- a. **The Impact of Production Ingredients:** The cost of raw materials, labor, energy, and other factors needed for production significantly affects supply. These are the building blocks that producers need to create their offerings.
- b. **The Price Connection:** If the cost of inputs rises, producers' profit margins shrink at a given price point. They might be less willing to supply the same quantity unless they can raise their own prices or find ways to reduce production costs.

3. Technology:

Innovation as a Game Changer: Technological advancements can revolutionize production processes. This can lead to several effects:

- a. **Increased Efficiency:** New technologies can help producers create more output with the same amount of resources, effectively lowering production costs.
- b. **Reduced Costs:** Lower production costs allow businesses to maintain profitability even if they offer lower prices, potentially increasing the quantity supplied.
- c. **New Products:** Technological advancements can enable the creation of entirely new products, expanding the overall supply in a market.

4. Availability of Resources:

The Limits of Production: The quantity of goods or services that can be supplied is ultimately constrained by the availability of resources. These resources can include:

- a. **Raw Materials:** Shortages of essential materials like cotton for clothing or silicon chips for electronics can limit production and reduce supply.
- b. **Labor:** A skilled workforce is necessary for many industries. If there's a shortage of qualified workers, production might be limited, impacting supply.

5. Government Regulations:

The Rules of the Game: Government regulations, taxes, and subsidies can influence the cost of production and impact supply in several ways:

- a. **Increased Costs:** Regulations requiring specific safety measures or environmental standards can raise production costs, potentially discouraging some producers and reducing supply.
- b. **Subsidies:** Government subsidies can lower production costs, incentivizing businesses to increase supply.
- c. **Restrictions:** In some cases, governments might impose quotas or limitations on production to control prices or conserve resources.

6. Expectations of the Future:

Looking Ahead: Producers don't just base their decisions on the current market situation. They also consider their expectations about future prices.

- a. **Anticipated Price Increases:** If producers believe prices will rise in the future, they might hold back some inventory, reducing current supply to capitalize on higher prices later.
- b. **Anticipated Price Decreases:** Conversely, if they anticipate future price decreases, they might be more likely to sell off existing inventory, potentially increasing current supply.

7. Number of Sellers (Market Structure):

The Power of Competition: The number of sellers in a market (market structure) can influence how much control individual producers have over price and supply:

- a. **Perfect Competition:** In a perfectly competitive market with many sellers, individual producers have little control over price. They act as price takers and adjust their supply based on the market price.
- b. **Imperfect Competition (Monopolies, Oligopolies):** In markets with few sellers (monopolies or oligopolies), producers have more control over price. They might strategically limit supply to maintain higher prices and maximize profits.

2.4.2. Supply Function

The law of supply explains the general relationship between price and quantity supplied. But businesses and economists often crave a more precise tool for analysis. This is where the **supply function** comes in. It's a mathematical equation that captures how various factors influence the quantity of a good or service that producers are willing to sell at different price points.

Formula:

The supply function is typically denoted as $SX = f(PX, PF, O, T, t, S)$, where:

SX represents the **quantity supplied** of the good.

PX represents the **price** of the good.

PF represents **factor inputs** used for production. This can include:

1. **Raw materials:** The availability and cost of raw materials like cotton for clothing or silicon chips for electronics directly impact production costs and therefore supply.
2. **Human resources:** A skilled workforce is necessary for many industries. The size, skill set, and wage levels of the labor force can affect the supply function.
3. **Machinery:** The efficiency and capacity of machinery and technology influence production capabilities. Newer technologies can reduce costs and increase output, potentially leading to higher supply at a given price.

O represents **external factors** outside the direct control of producers, including:

T (Technology): Advancements in technology can revolutionize production processes, allowing producers to offer more at lower prices (increased supply). Conversely, outdated technology might limit production capacity.

t (Taxes): The tax environment, including corporate taxes and import/export duties, can influence production costs and impact supply. Higher taxes can lead to decreased supply, while lower taxes can incentivize production.

S (Subsidies): Government subsidies can lower production costs and encourage producers to offer more at a given price, effectively increasing supply.

Understanding the Relationship:

The supply function establishes a relationship between these factors (PX, PF, O) and the quantity supplied (SX). It allows us to quantify how changes in one factor (like a price increase or a technological advancement) can influence the quantity of goods producers are willing to sell.

2.4.3.Law of Supply

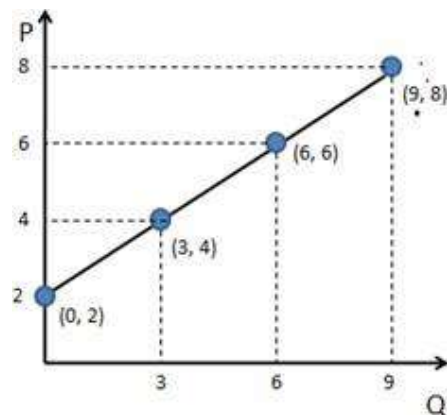
The Law of Supply:

Core Principle: As the price of a good or service increases, all other factors remaining constant, the quantity supplied by producers will also generally increase. This means higher prices incentivize producers to offer more of a product for sale.

Graphical Representation: The law of supply is typically depicted by a supply curve that slopes upwards. This positive slope reflects the direct relationship between price and quantity supplied.

In the Words of Dooley, —The law of supply states that other things remaining the same, higher the prices the greater the quantity supplied and lower the prices the smaller the quantity supplied.

Price	Quantity supplied
2	0
4	3
6	6
8	9



The above diagram shows the supply curve that is upward sloping (positive relation between the price and the quantity supplied). When the price of the good was at P4, suppliers were supplying Q3 quantity. As the price starts rising, the quantity supplied also starts rising.

Factors Affecting the Law of Supply:

4. **Production Costs:** Changes in the cost of land, labor, capital, and entrepreneurship can impact supply. If these costs increase, producers might be less willing to supply at a given price due to lower profitability.
5. **Technological Advancements:** Technological advancements that improve production efficiency can reduce costs and allow producers to increase supply even at constant prices.
6. **Taxes:** Higher taxes can increase production costs and discourage production, potentially decreasing supply. Conversely, lower taxes can incentivize production and increase supply.
7. **Laws and Regulations:** Government regulations aimed at environmental protection, safety, or other public interests might limit production of certain goods, reducing supply.
8. **Unforeseen Events:** Events like war, natural disasters, or political instability can disrupt production and decrease supply. Conversely, some industries might see increased demand during such situations.

Exceptions to the Law of Supply:

1. **Expectation of Future Price Increase:** Sometimes, sellers might create a shortage of a product (artificial scarcity) if they expect its price to rise significantly in the future. This expectation can lead to decreased supply despite a current price increase.
2. **Perishable Goods:** For perishable goods like vegetables, there's a risk of spoilage. At certain points, even if the price drops, producers might increase supply to avoid losing their inventory.
3. **Labor Supply:** In the labor market, after a certain wage point, additional wage increases might not significantly increase the quantity of labor supplied. People might choose to work less or prioritize leisure time.
4. **Rare or Limited Goods:** Unique or irreplaceable items like the Kohinoor diamond or a famous painting won't have an infinitely elastic supply. Their quantity remains fixed regardless of price increases.

Important Questions

Short Questions:

1. Define Demand Analysis.
2. Explain the Law of Demand.
3. Define Elasticity of Demand.
4. Briefly explain Survey Methods.
5. Define Determinants of Demand Analysis.
6. Define Determinants of Supply.
7. Define Demand Forecasting.
8. Explain the characteristics of Demand Forecasting.
9. What is Supply Analysis? Explain its function.
10. Explain the Law of Supply.

Long Questions:

1. Explain the types of elasticity of demand.
2. Explain demand forecasting methods.
3. Explain the significance of elasticity of demand.
4. What is the Law of Demand? Explain the graphical representation of the Law of Demand.
5. What is the Law of Supply? Explain its determinants.
6. What is demand? Explain its determinants.
7. Explain briefly the characteristics of good demand forecasting.
8. What is supply analysis? Explain its determinants.
9. Define elasticity of demand; explain its measurements and significance.
10. Factors affecting elasticity of demand.

Objective Type Questions

Multiple-Choice Questions (MCQs)

1. What does price elasticity of demand measure?

- a) The responsiveness of quantity demanded to a change in price.
- b) The responsiveness of demand to a change in income.
- c) The change in demand due to a change in price.
- d) The change in price due to a change in demand.

Answer: a) The responsiveness of quantity demanded to a change in price.

2. Which of the following represents unitary elastic demand?

- a) Elasticity is greater than 1.
- b) Elasticity is less than 1.
- c) Elasticity equals 1.
- d) Elasticity equals 0.

Answer: c) Elasticity equals 1.

3. The Law of Demand states that:

- a) As price increases, demand increases.
- b) As price decreases, demand decreases.
- c) As price increases, demand decreases.
- d) As price decreases, supply decreases.

Answer: c) As price increases, demand decreases.

4. What type of elasticity measures the responsiveness of demand to changes in consumer income?

- a) Price elasticity of demand.
- b) Cross elasticity of demand.
- c) Income elasticity of demand.
- d) Supply elasticity.

Answer: c) Income elasticity of demand.

5. If the demand for a good is perfectly inelastic, the demand curve is:

- a) Horizontal.
- b) Vertical.
- c) Downward sloping.
- d) Upward sloping.

Answer: b) Vertical.

6. A good with a cross elasticity of demand of -1.5 is considered:

- a) A substitute.
- b) A complement.
- c) An inferior good.

d) A normal good.

Answer: b) A complement.

7. The method of demand forecasting that relies on expert opinions is:

a) Trend projection.

b) Econometric models.

c) Delphi method.

d) Market experiments.

Answer: c) Delphi method.

8. Which of the following is a determinant of supply?

a) Consumer tastes and preferences.

b) Technology.

c) Income of consumers.

d) Price of substitutes.

Answer: b) Technology.

9. The Law of Supply states that:

a) As price increases, supply decreases.

b) As price decreases, supply decreases.

c) As price increases, supply increases.

d) As price decreases, supply increases.

Answer: c) As price increases, supply increases.

10. A supply function shows the relationship between:

a) Price and quantity demanded.

b) Price and quantity supplied.

c) Income and quantity demanded.

d) Price and demand elasticity.

Answer: b) Price and quantity supplied.

11. What type of demand elasticity would likely be observed for a necessity good with few substitutes?

a) Elastic.

b) Inelastic.

c) Perfectly elastic.

d) Unitary elastic.

Answer: b) Inelastic.

12. Which of the following best describes 'elastic demand'?

a) Demand is highly responsive to changes in price.

b) Demand is not very responsive to changes in price.

c) Demand is unaffected by changes in price.

d) Demand increases proportionately to price changes.

Answer: a) Demand is highly responsive to changes in price.

13. Which factor does NOT affect price elasticity of demand?

- a) Availability of substitutes.
- b) Proportion of income spent on the good
- c) Time period considered.
- d) Production cost.

Answer: d) Production cost.

14. Which method of demand forecasting involves statistical techniques to predict future demand?

- a) Jury of executive opinion.
- b) Sales force composite.
- c) Trend projection.
- d) Consumer surveys.

Answer: c) Trend projection.

15. Which characteristic is NOT essential for good demand forecasting?

- a) Accuracy.
- b) Timeliness.
- c) Complexity.
- d) Cost-effectiveness.

Answer: c) Complexity.

16. Which of the following indicates perfectly elastic demand?

- a) Elasticity is greater than 1.
- b) Elasticity is less than 1.
- c) Elasticity equals 1.
- d) Elasticity equals infinity.

Answer: d) Elasticity equals infinity.

17. Which factor is NOT a determinant of supply?

- a) Price of the good itself.
- b) Number of suppliers.
- c) Income of consumers.
- d) Expectations of future prices.

Answer: c) Income of consumers.

18. The price elasticity of demand for a good is -0.5. This good is:

- a) Elastic.
- b) Inelastic.
- c) Perfectly elastic.
- d) Unitary elastic.

Answer: b) Inelastic.

19. The relationship between two goods where the increase in price of one leads to an increase in demand for the other is known as:

- a) Complements.
- b) Substitutes.
- c) Inferior goods.
- d) Normal goods.

Answer: b) Substitutes.

20. Demand forecasting is significant because it:

- a) Increases production cost.
- b) Helps in making informed business decisions.
- c) Leads to overproduction.
- d) Reduces the market size.

Answer: b) Helps in making informed business decisions.

Fill-in-the-Blank Questions

1. The price elasticity of demand measures the responsiveness of quantity demanded to a change in_____.

Answer: price

2. When the price elasticity of demand is greater than 1, the demand is considered_____.

Answer: elastic

3. The Law of Demand states that, ceteris paribus, as the price of a good increases, the quantity demanded_____.

Answer: decreases

4. Income elasticity of demand measures the responsiveness of quantity demanded to a change in_____.

Answer: income

5. If the demand curve is vertical, the demand is perfectly_____.

Answer: inelastic

6. Goods that have a negative cross elasticity of demand are known as_____.

Answer: complements

7. The Delphi method is a demand forecasting technique that relies on_____opinions.

Answer: expert

8. One of the key determinants of supply is the_____of production technology.

Answer: advancement

9. The Law of Supply states that, ceteris paribus, as the price of a good increases, the quantity supplied_____.

Answer: increases

10. A supply function shows the relationship between price and quantity_____.

Answer: supplied

11. A necessity good with few substitutes is likely to have_____demand.

Answer: inelastic

12. Demand that is highly responsive to changes in price is described as_____demand.

Answer: elastic

13. The availability of_____is a major factor affecting the price elasticity of demand.

Answer: substitutes

14. Trend projection is a demand forecasting method that uses_____techniques.

Answer: statistical

15. Good demand forecasting must be accurate, timely, and_____ -effective.

Answer: cost

16. Perfectly elastic demand is represented by an elasticity value of_____.

Answer: infinity

17. The number of suppliers in the market is a determinant of_____.

Answer: supply

18. If the price elasticity of demand for a good is -0.5, the demand for this good is considered_____.

Answer: inelastic

19. Two goods are considered_____if an increase in the price of one leads to an increase in the demand for the other.

Answer: substitutes

20. Demand forecasting is crucial because it helps businesses in making_____decisions.

Answer: informed