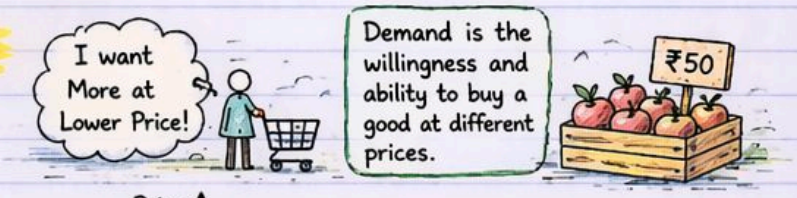
Economics

Module-3 Notes

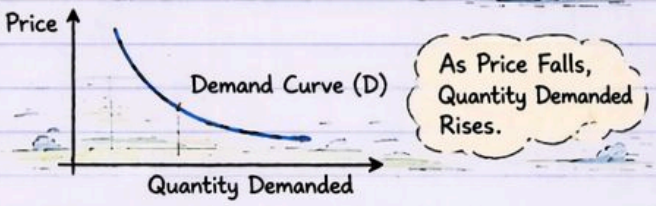
by pyqfort.com

Contents Covered:

- **Concept of Demand**



- **Demand Curve**



- **Law of Demand**

Law of Demand: Price ↓ → Quantity Demanded ↑

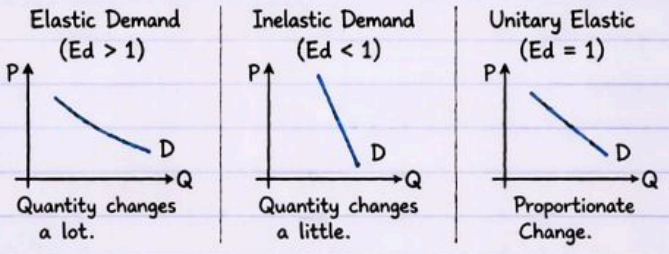
Price (₹)	Qty. Demanded
50	2
40	4
30	6

- **Elasticity of Demand**

Elasticity shows how much Quantity Demanded changes with a change in Price.

$$Ed = \frac{\% \text{ Change in QD}}{\% \text{ Change in Price}}$$

- **Price Elasticity of Demand**



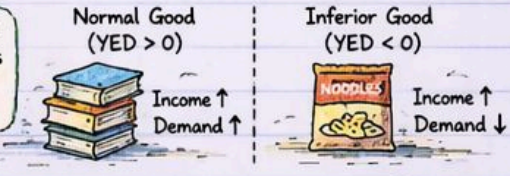
- **Cross Elasticity of Demand**

Cross Elasticity shows how demand for one good changes when price of another good changes.

If Price of Tea ↑ Demand for Coffee ↑ → They are Substitutes (Cross Ed. is +ve)

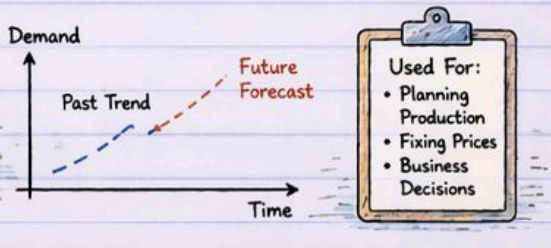
- **Income Elasticity of Demand (YED)**

YED shows how demand changes with change in Income.



- **Demand Forecasting**

Demand Forecasting means predicting future demand using past data.



The Concept of Demand in Economics

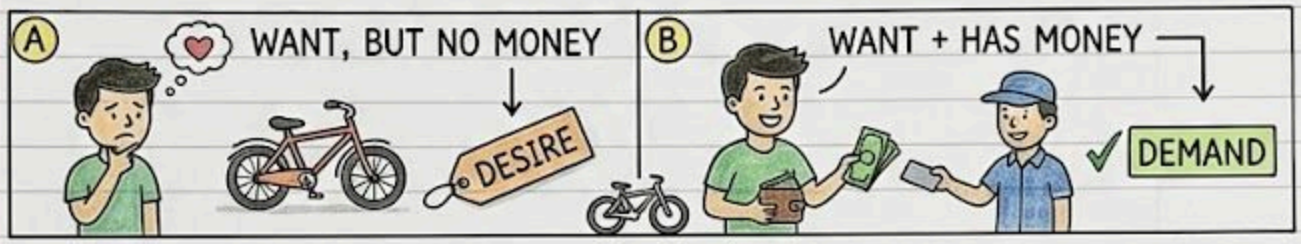
1. Definition & Core Conditions:

Demand is defined as the quantity of a commodity that a consumer is willing and able to purchase or consume during a given period of time.

- A consumer possesses willingness to buy.
- Possesses ability (purchasing power) to purchase or consume.
- Is related to a given period of time.

2. Illustrative Example:

Saurabh wants a motorbike but lacks money → Desire, not Demand.
When he can afford it in a given time → Demand.



3. Economist Perspectives:

Ferguson: Quantities consumers are able & willing to buy at at each possible price in a given time, ceteris paribus.

Schiller: Ability & willingness to buy a specific quantity at alternative prices in a given time, ceteris paribus.

4. Synthesis & Influencing Factors:

Good Definition: Demand is the quantity of a good/service that consumers are willing & able to purchase at various prices over a specific period of time, ceteris paribus (other factors constant).

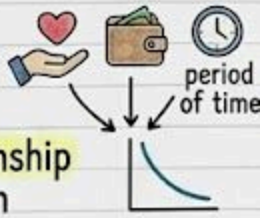
- Price 
- Income Levels 
- Preferences 
- Prices of related goods. 

5. Price-Quantity Relationship:

Generally, if price ↓, quantity demanded ↑ (ceteris paribus).
This inverse relationship is shown by the Demand Curve.

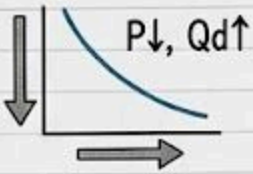
The Demand Curve & its Characteristics

1. **Introduction & Connection:**
First, let's link the 'Concept of Demand' to the Curve.

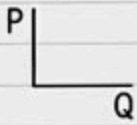


- Demand (Willingness & Ability) has an inverse relationship with Price (ceteris paribus). This is graphically shown by the Demand Curve.

1. **Downward Slope & the Law of Demand:**
- Downward Slope → and an inverse relationship (Law of Demand): as Price ↓, Quantity demanded ↑.

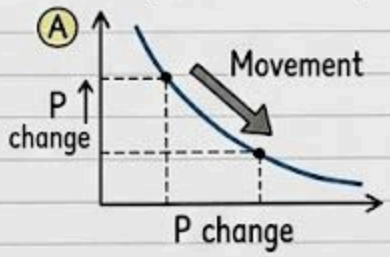


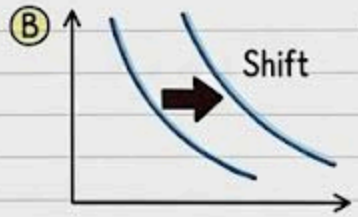
2. **Price and Quantity Axes:**
- Price is on the y-axis, Quantity on the x-axis.



3. **Non-Linear or Linear Shape:**
- Linear (straight line) or Non-linear (curved line) based on proportionality of change.

4. **Shift vs. Movement:**
- Movement along the curve is caused by changes in the Price of the good.
- Shift of the curve is caused by factors other than price (e.g., changes in Income, Preferences).

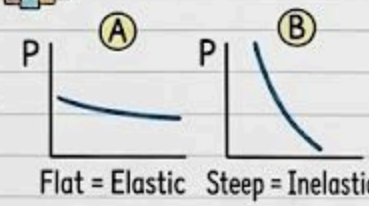




Other factors →
- Income
- Preferences
- Related goods (tea & coffee)

5. **Determinants of Demand:**
Factors influencing the position and slope of the curve.
- Income levels (Normal vs. Inferior goods);
- Prices of related goods (Complements & Substitutes); &
- Consumer preferences (Trends & Tastes);
- Market size.

6. **Elasticity:**
- Elastic demand → a flatter curve (sensitive to
- Inelastic demand → a steeper curve (less sensitive).



7. **Ceteris Paribus Assumption:**
Assumes all other factors (income, tastes, etc.) remain constant.

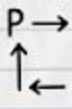
Law of Demand

Intro & Assumptions

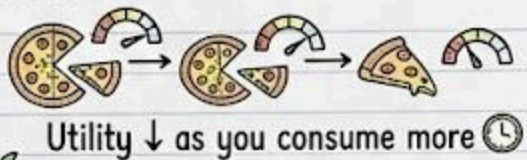
I. The Law of Demand (Principle & Definition):

- States that, all other factors being constant.
- States that, *ceteris paribus*, quantity demanded (Qd) of a good increases when its Price (P) decreases, and Qd decreases when P increases. This is an inverse relationship, meaning P & Qd move in opposite directions.

↳ Supported by academic quotes: "diminshes with fall in price and diminishes with rising price." distillation.



- This happens because of the Law of Diminishing Marginal Utility.

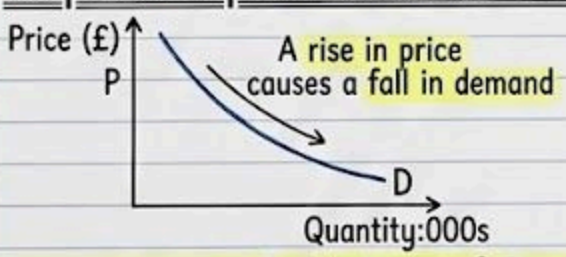


II. Example and Supportive Points:

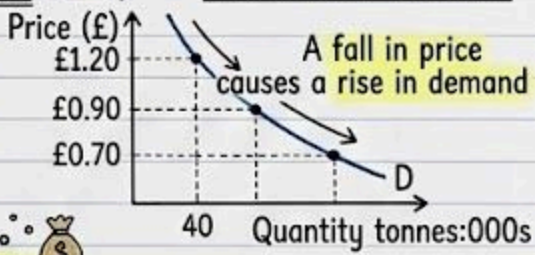
- Apple Example: When apple price tag ⇩ appears, consumers buy more apples (baskets with more apples). When price tag rises ⇧ appears, buy fewer apples).

↳ The 'other things' being constant includes factors like consumer income, price of related goods, consumer tastes, fashion, etc.

III. Graphical Representation of the Law:



The Law of Demand

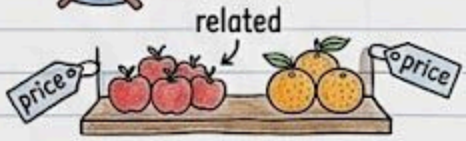


IV. Assumptions of the Law of Demand:

① Taste & Preferences Constant

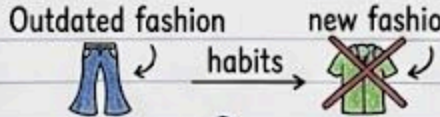
② Income Constant

③ Price of Related Goods Constant



④ Quality Constant

⑤ Consumer Habits Constant



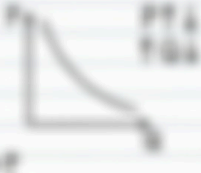
⑥ No Price Change Expectations

⑦ Normal Good, No Substitutes

Characteristics and Reasons of the Law of Demand

Characteristics of the law of demand

1. There is an inverse relationship between price and quantity demanded.

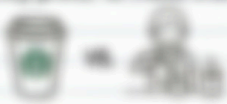


2. Price is the independent variable.

3. Demand is the dependent variable on the price of that commodity.

For example, when the price of 1 kg of mangoes goes down from Rs.80 to Rs. 50, the quantity demanded will go up. Many people who were not able to buy at Rs.80, are now able to purchase at Rs 50.

Similarly, if local Starbucks raises the price of coffee from Rs 700 to Rs. 1000, the quantity demanded will be decreased. Fewer people will buy their coffee, rather they prefer to make their own at home because of the increased price.



Reasons for the Law of Demand

The Law of Demand states that, all else being equal, the quantity demanded of a good decreases when its price increases and vice versa. The inverse relationship between price and quantity demanded can be explained by the following reasons:

1. Income Effect

- When the price of a good decreases, the purchasing power of consumers increases, allowing them to buy more of the good without spending extra money.
- Conversely, when the price rises, consumers' purchasing power decreases, leading them to buy less.
- Example: If the price of movie tickets drops, consumers may feel wealthier and attend more movies.

2. Substitution Effect

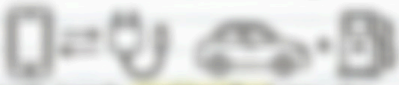
- When the price of a good rises, consumers tend to substitute it with a cheaper alternative.
- Conversely, if the price of a good falls, it becomes more attractive compared to its substitutes, leading to increased demand.
- Example: If the price of coffee increases, tea may become a preferred alternative for consumers.

3. Diminishing Marginal Utility

- The law of diminishing marginal utility states that as a consumer consumes more units of a good, the additional satisfaction (utility) derived from each extra unit decreases.
- As a result, consumers are only willing to buy more units at lower prices since the value they assign to additional units diminishes.
- Example: A person might pay a high price for the first slice of pizza but will only buy more slices if the price drops.

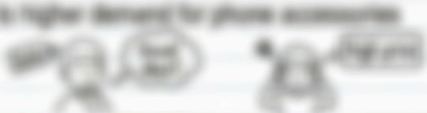
4. Consumer Behavior and Rational Choices

- Consumers aim to maximize their satisfaction within their budget constraints. When prices fall, they can purchase more of the good and still stay within their budget, leading to higher demand.
- On the other hand, higher prices discourage purchases because they strain budgets or reduce the perceived value of the good.



5. Availability of Complementary Goods

- When the price of a good decreases, its complements (goods used together) may also experience increased demand.
- Conversely, when the price increases, demand for both the good and its complements may decrease.
- Example: A drop in smartphone prices can lead to higher demand for phone accessories like covers and chargers.



6. Psychological Factors

- Lower prices may psychologically encourage consumers to perceive the good as a better deal, promoting higher purchases.
- High prices, on the other hand, discourage purchases due to perceived unaffordability or lack of value.

7. Market Competition

- When prices decrease, more consumers can afford the good, increasing the market size. Higher prices, however, limit affordability, reducing the number of potential buyers.

Elasticity of Demand

Elasticity of demand measures how much the quantity demanded changes in response to changes in factors such as price, income, or the price of related goods.
It helps understand the responsiveness of consumers to these changes and plays a crucial role in economic analysis, business decisions, and policymaking.

It can be calculated as the percentage change in quantity demanded divided by percentage change in another economic variable.

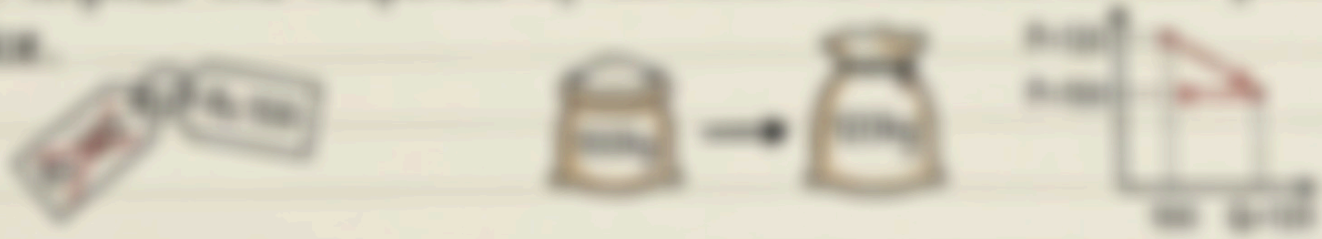
$$\text{Elasticity of demand} = \frac{\% \Delta \text{ Quantity demanded}}{\% \Delta \text{ Economic Variable}}$$

% Δ quantity demanded = percentage change in quantity demanded

% Δ Economic Variable = percentage change in Economic Variable

A higher value for elasticity of demand with respect to any economic variable means that customers are more responsive to changes in that variable.

For example, prices of rice fall from Rs.120/kg to Rs 100/kg. Due to this, the quantity demanded in the market increases from 100kg to 120 kgs.
It implies the response of demand to decline in the price of rice.



Types of Elasticity of Demand

1. **Price Elasticity of Demand (PED)** – It refers to the degree of responsiveness of quantity demanded with respect to change in the price of that particular commodity, other things remain constant.

   Price Elasticity of Demand (PED) = $\frac{\%\text{ change in quantity demanded}}{\%\text{ change in Price}}$

   - **Elastic Demand (PED > 1)** – A small price change leads to a large change in quantity demanded (e.g., luxury goods).
   - **Inelastic Demand (PED < 1)** – A large price change leads to a small change in quantity demanded (e.g., necessities like salt).
   - **Unitary Elastic Demand (PED = 1)** – Percentage change in price equals the percentage change in quantity demanded.

2. **Income Elasticity of Demand (YED)** – It measures how quantity demanded changes with change in consumer income.

   Income Elasticity of Demand (YED) = $\frac{\%\text{ change in quantity demanded}}{\%\text{ change in income}}$

   - **Normal Goods (YED > 0)** – Demand increases with income (e.g., cars, electronics).
   - **Inferior Goods (YED < 0)** – Demand decreases as income rises (e.g., cheap clothing).

3. **Cross Price Elasticity of Demand (XED)** – It measures the responsiveness of demand for one good to change in the price of a related good.

   Cross Price Elasticity of Demand (XED) = $\frac{\%\text{ change in quantity demanded of Good A}}{\%\text{ change in Price of Good B}}$

   - **Substitutes (XED > 0)** – Demand for one good rises when the price of its substitute increases (e.g., tea and coffee).
   - **Complements (XED < 0)** – Demand for one good falls when the price of its complement rises (e.g., cars and fuel).

Determinants and Importance of Elasticity of Demand

1. Determinants of Elasticity of Demand

- **Nature of the Good**
  Necessities have inelastic demand, while luxuries have elastic demand.
- **Availability of Substitutes**
  Goods with more substitutes have elastic demand.
- **Proportion of Income Spent**
  Expensive goods are more elastic.
- **Time Period**
  Demand is more elastic in the long run.
- **Addiction or Habitual Goods**
  These have inelastic demand.

2. Importance of Elasticity of Demand

- **Pricing Decisions**
  - Businesses use elasticity to set optimal prices.
  - Example: Increasing prices of inelastic goods like medicines boosts revenue.
- **Taxation Policy**: Governments tax inelastic goods like tobacco to generate revenue.
- **Subsidy Allocation**: Subsidies are often given for elastic goods to increase consumption.
- **International Trade**: Elasticity determines the impact of price changes on export revenue.

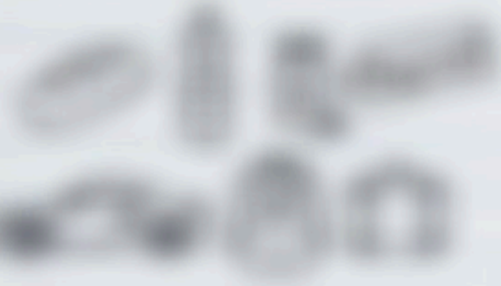
Examples:

Elastic Demand: A 10% increase in the price of branded clothing may lead to a 20% drop in demand.

Inelastic Demand: A 10% increase in the price of salt might lead to only a 1% decrease in demand.

Factors Influencing Elasticity of Demand

1. **Nature of the Good** (Necessity vs Luxury)
   - Necessities: Goods with INELASTIC demand
   - Examples: Food, Water, Medicines
   - Luxuries: Elastic
   - Examples: Cars, Branded Clothes, Trips



2. **Availability of Substitutes**
   - More substitutes: Elastic (e.g., Tea vs Coffee)
   - Fewer substitutes: Inelastic (e.g., Salt or Insulin)

3. **Proportion of Income Spent**
   - High Proportion: Elastic (e.g., Car or House)
   - Low Proportion: Inelastic (e.g., Matches or Toothpaste)

4. **Time Period**: short: Inelastic vs long: more elastic

5. **Habitual Consumption**: Inelastic
   (e.g., Cigarettes, Alcohol, Coffee)

6. **Durability**: durable: Elastic (e.g., Cars, Appliances)
   - non-durable: Inelastic (e.g., Food, Medicines)

7. **Range**: broad market: Inelastic (e.g., "Food")
   - narrow market: Elastic (e.g., "Organic Apples")

8. **Price Level**: high price: Elastic vs low price: Inelastic

9. **Consumer Preferences**: strong preferences: Inelastic
   (brand loyalty, e.g., Loyalty Cars, or High-end Smartphones)
   weak: more elastic (generic white tea vs consciousness)

10. **Complements & Substitutes**
    complements: Inelastic (e.g., Cars and Fuel)
    substitutes: Elastic (e.g., Pepsi vs Coke)

11. **Advertising & Branding**: strong branding reduces elasticity

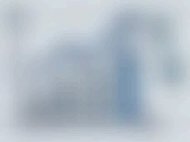
12. **Government Policies**: Tax/subsidy can alter elasticity

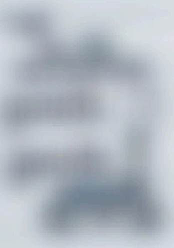
Practical Applications of Elasticity of Demand

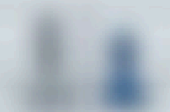
Its practical applications span across various sectors, offering valuable insights for businesses, policymakers, and consumers.

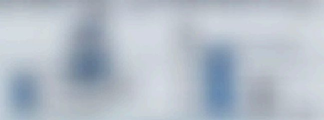
1. Pricing Strategy
- Firms use price elasticity to set optimal prices.
  For inelastic products (essentials, e.g. medicine, fuel), they can raise prices without losing many customers.
  For elastic goods (luxuries), focus on competitive pricing.
- Companies decide the magnitude of discounts to maximize revenue.

2. Taxation Policy
Governments apply elasticity principles to impose taxes on goods with inelastic demand.
Higher taxes ensure steady tax revenue. Examples: tobacco, fuel.

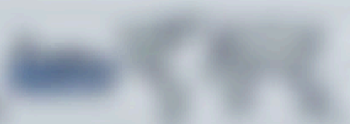
3. Revenue Maximization

Predict how changes in price will affect total revenue.

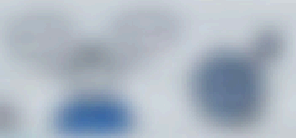
4. Production Decisions

Resource Allocation: adjust production volume for elastic goods.
Capacity Planning: maintain consistent levels for inelastic goods.

5. Competitive Analysis

Determine market positioning,
position based on price (elastic) or quality/branding (inelastic).



6. Public Policy
Evaluate goods for subsidies and where price ceilings/floors are necessary.
Examples: essential medicines.

7. International Trade

Nations decide on tariffs & trade agreements,
inform exchange rate impacts on export/import volumes.

8. Consumer Behavior Analysis

Guides identifying target markets, preferences.
Assess likely success of new product launches.

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1. **Pricing Strategy**
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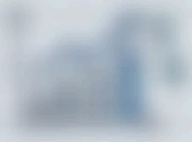

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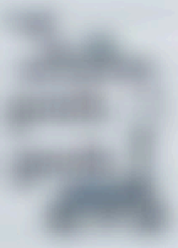
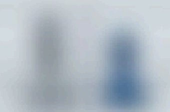
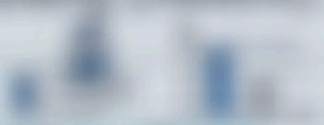
Capacity Planning: maintain consistent levels for inelastic goods.



5. **Competitive Analysis**
Determine market positioning:

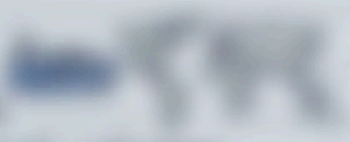


position based on price (elastic) or quality/branding (inelastic).



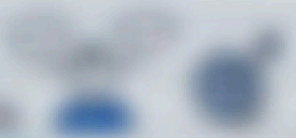
6. **Public Policy**
Evaluate goods for subsidies and where price ceilings/floors are necessary.
Examples: essential medicines.

7. **International Trade**



Nations decide on tariffs & trade agreements.
Inform exchange rate impacts on export/import volumes.

8. **Consumer Behavior Analysis**



Guides identifying target markets, preferences.
Assess likely success of new product launches.

Price Elasticity of Demand: Intro & Key Concepts

1. Definition of PED

Price Elasticity of Demand (PED) measures the **responsiveness** of the quantity demanded (Qd) of a good/service to a **change** in its price (P).

- If **quantity** has much quantity demanded changes when price changes.

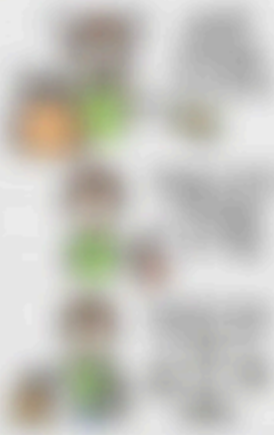
2. The PED Formula

$$PED = \frac{\%\Delta \text{ Quantity Demanded}}{\%\Delta \text{ Price}}$$

- **%Δ** means **percentage change**
- **%Δ Price** = percentage change in price.
- **%Δ Quantity Demanded** = percentage change in **quantity demanded**

3. Interpretation of PED Values

- If **PED > 1** Demand is **elastic**. Quantity demanded changes **significantly** with a price change.
- If **PED = 1** Demand is **unitary**. Quantity demanded changes **by the same** with a price change.
- If **PED < 1** Demand is **inelastic**. Quantity demanded changes **a little** in response to a price change.



4. Visualising the Five Scenarios (with Graphs)

A. Perfectly Elastic

B. Perfectly Inelastic

C. Unitary Elastic

D. Relatively Elastic

E. Relatively Inelastic

Price Elasticity of Demand: Intro & Key Concepts

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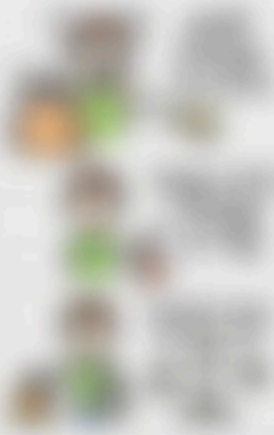

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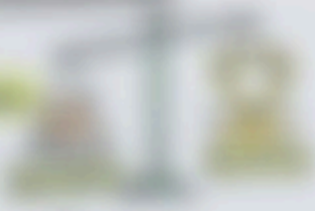
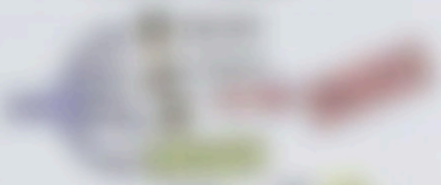
Factors Affecting Price Elasticity of Demand

1. **Nature of Commodity**
   Necessity goods like salt, cooking oil have **inelastic** demand. Luxuries like cars, gold are **elastic**. Price change has small impact.



2. **Availability of Substitutes**
   Close substitutes like Coca-Cola, Pepsi cause **elastic** demand.



3. **Goods with Different Uses**
   Goods with multiple uses are **elastic**. Milk for drinking, tea, cheese, curds.

4. **Income of consumer**
   Middle income group has **elastic** demand. High & Low income groups are **inelastic**.

5. **Habit of Consumers**
   Habitual goods (cigarette, alcohol, coffee) are **inelastic**. Little change in demand.

6. **Price point**
   High (luxuries) and Low (necessary) priced goods demand **inelastic**. Mid are **elastic**.

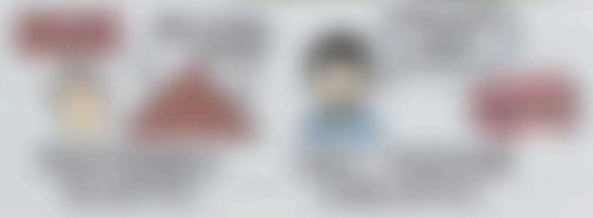
7. **Time Period**
   Short period demand is **inelastic**. Consumers have little time to adjust. Long period is **elastic**. Time is the attributes.

8. **Joint Demand**
   Complementary goods (car & petrol) demand decrease is **inelastic**. Used together.

9. **Duty and VAT Paid demand**
   High Duty (Imported) indirect tax **inelastic**. VAT goods demand is **elastic**.

10. **Proportion of Income Spent on a commodity**
    Small proportion (toothpaste, pencil) is **inelastic**. Large proportion (clothes, electronics, headphones, etc.) is **elastic**.

11. **Postponement of Use**
    Postponable demand (building house) is **elastic**. Can't be postponable (food, drink, wine, hunger) is **inelastic**.



Applications of Price Elasticity of Demand

1. **Pricing Strategy for Businesses**
   Companies use PED to [illegible] maximize profits.
   - **Inelastic**: Increase prices (inelastic goods, e.g., luxury goods).
   - **Elastic**: Price cuts can [illegible] increase revenue and sales volume.

2. **Taxation**: Governments impose taxes on [illegible] goods (tobacco, alcohol, gas) for it [illegible] reduces [illegible] the harmful

3. **Regulate Monopolies**: Determine the optimal price point for maximum revenue.
   - **Elastic**: Price decrease might [illegible] a disproportional increase in demand and total revenue.
   - **Inelastic**: Price increases can be beneficial for revenue.

4. **Public Policy Decisions**: Policymakers use PED to decide on [illegible] subsidies, [illegible] healthcare, [illegible] e.g., subsidies) helps access basic necessities while [illegible] tax imposed on unhealthy

5. **Production and Supply Decisions**: PED helps plan [illegible] producing and marketing [illegible] levels.
   - **Inelastic**: products have [illegible] demand.
   - **Elastic**: products require [illegible] supply levels for price-sensitive markets.

6. **Pricing Tiers and Competition**: Evaluate if market entry, [illegible] or [illegible].
   - **Elastic**: significant competition, crucial [illegible] pricing strategies.
   - **Inelastic**: opportunities [illegible] for [illegible] without significant

7. **Global Trade**: PED assists [illegible] how tariffs/subsidies affect [illegible] in [illegible] markets.
   - Crucial for [illegible] export and [illegible] products.

8. **Environmental Policy**: Governments use PED to influence [illegible] decisions for environmentally harmful products (goods, fossil fuels).
   - **Taxes**: [illegible] taxes and regulations to promote [illegible] sustainability.

9. **Consumer Choice and Welfare**: Help consumers understand [illegible] how price changes affect [illegible] purchasing decisions.
   - **Taxes**: [illegible] can [illegible] disproportionately affect [illegible] low-income [illegible].

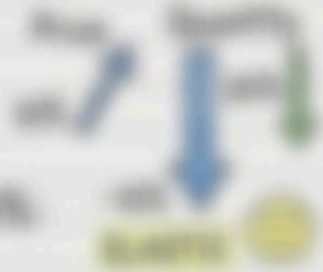
10. **Product Differentiation and Branding**: For [illegible] businesses, [illegible] price [illegible] branding and differentiation.
    - **Elastic** markets: companies focus on [illegible] pricing strategies [illegible] market [illegible].

Methods to Measure Price Elasticity of Demand

1. Percentage (or Proportionate) Method

- Calculates PED as the ratio of % change in quantity demanded to % change in price.

$$PED = \frac{\%\text{Change in Quantity Demanded}}{\%\text{Change in Price}}$$



Example: If Price ↑ 10%, & Quantity Demanded ↓ 20%
$PED = \frac{-20\%}{10\%} = -2$ (Elastic)

2. Total Revenue (Expenditure) Method

- Examines how total revenue (TR = P × Q) responds to price changes.

- **Cases:**
  - Elastic Demand: If Price ↓ → TR ↑
    (or Price ↑ → TR ↓) Inversely related.

  - Inelastic Demand: If Price ↓ → TR ↓
    (or Price ↑ → TR ↑) Directly related.

  - Unitary Elastic: If Price change has no effect on TR.

3. Point Elasticity Method

- Measures elasticity at a specific point on the demand curve using calculus.

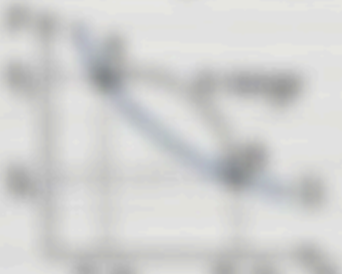
- Formula: $PED = \frac{dQ}{dP} \times \frac{P}{Q}$

(dQ/dP is slope, P and Q are coordinates)

4. Arc Elasticity Method

- Measures elasticity over a range of prices (between two points).

- Formula: $PED = \frac{\Delta Q / \text{Average Quantity}}{\Delta P / \text{Average Price}}$



- Breakdown:
  ΔQ = Change in Q, Average $Q = \frac{Q_1 + Q_2}{2}$
  ΔP = Change in Price
  Average $Q = \frac{Q_1 + Q_2}{2}$, Average $P = \frac{P_1 + P_2}{2}$

Cross Elasticity of Demand - Intro

What is CED? Good A ☕ Good B

- **Cross Elasticity of Demand (CED)** measures the **responsiveness** of **quantity demanded** of **Good A** to a **change** in the **price** of another related **Good B**.

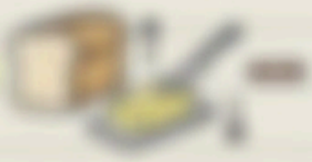
The Formula:

$$CED = \frac{\text{Percentage change in quantity demanded of Good A}}{\text{Percentage change in price of Good B}}$$

Types of Cross Elasticity of Demand:

- **Positive CED:** ($E_{xy} > 0$) Indicating **substitutes**.
  e.g., Tea price ↑ ⇒ demand for Coffee ↑

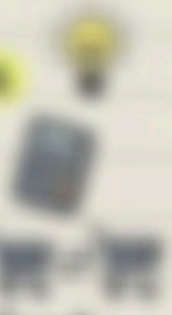
- **Negative CED:** ($E_{xy} < 0$) Indicating **complements**.
  e.g., Bread price ↑ ⇒ demand for Butter ↓



- **Zero CED:** ($E_{xy} = 0$)
  Goods are **unrelated**. **No effect**.

Importance (Intro):

- Helps businesses & policymakers understand **relations** between **products**.
- Aids **pricing** strategies for complements/substitutes.
- Useful in market **competition** analysis & **bundling**.



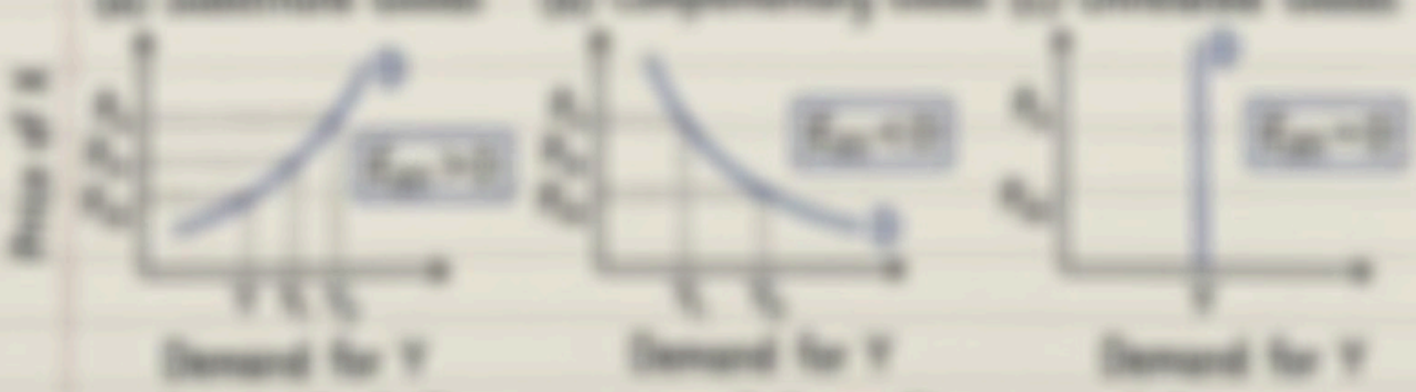


Fig. 2.57: Different Values of Cross Elasticity of Demand

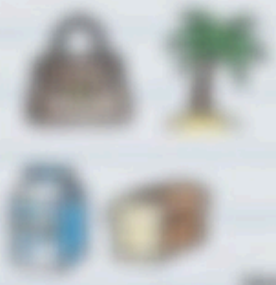
Income Elasticity of Demand (YED) - Zehra

measures how much the **quantity demanded** of a good **responds** to **changes** in **consumer income**.
It is **denoted** by E_y or **YED**

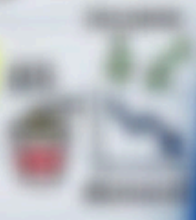
$$\text{YED} = \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Income}}$$

Types of Income Elasticity of Demand

- **Positive YED (Normal Goods)**: Dem. increases as income rises.
  - **Luxury Goods**: **High positive YED**
    e.g., designer clothes, vacations.
  - **Necessities**: **Low positive YED**
    e.g., basic groceries.



- **Negative YED (Inferior Goods)**: Dem. **decreases** as income rises. e.g., instant noodles, 2nd hand goods.



- **Zero YED**: Income changes do not affect demand. e.g., essential life-saving drugs.

Summary of Coefficients:

- $E_y > 0$ for Normal Goods (coefficient is **positive**)
- $E_y < 0$ for Inferior Goods (coefficient is **negative**)

Importance

- Market Analysis: helps id product types.
- Production Planning: guides resource allocation.
- Economic Policy: assists govts.

Definition of Demand Forecasting

1. Core Concept & Business Importance:
   - Process of estimating future demand for a product or service.
   - Based on historical data, market trends, and other factors.
   - Helps businesses: anticipate customer needs, and make informed decisions on production, pricing, and inventory management.

2. Key Definitions (Scholars):
   A) Cundiff and Still: "Estimate of sales during a specified future period based on the proposed marketing plan and... forces."

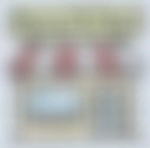
   B) Prof. Philip Kotler: "Expected level of company sales based on a chosen marketing plan and... environment."

3. Simple Practical Example:
   - Suppose Jan=1200, Feb=1600, Mar=1600 units.
   - Task: Forecast next month (April).
   - Method: Average of last three months.
   - Calculation: ($1200+1600+1600) /3 = 1400$.
   - Result: Forecast is 1400 units (assuming other things same).

Types of demand forecasting

1. **Active demand forecasting**: Done assuming the firm changes its course of action. Forecast is made under conditions of favorable future changes.

2. **Passive demand forecasting**: Rare, done by stable businesses with conservative growth plans. Firm doesn't change its course of action.



3. **Short term demand forecasting**: For a period of 3 to 12 months. Analyses demand patterns & strategic decisions.

4. **Long term demand forecasting**: Period of more than 12 months. Helpful in capital planning and business strategy.

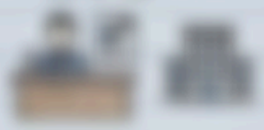
5. **External or National group forecasting**: By research wing or outside consultants. Deals with trends in general business.

6. **Internal or Company group forecasting**: For operations of a particular enterprise (production, sales, finance). Forecasts annual sales, profit, cash, employees, and number of employees.

7. **Macro-level forecasting**: Broad market operations are analyzed. Measured by indices like industrial production, national income, or expenditure.

8. **Industry-level forecasting**: By trade associations, based on surveys of consumers' intention & statistical trends.

9. **Firm-level forecasting**: Viewpoint of managers, related to an individual firm.

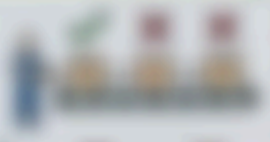


10. **Product line forecasting**: Related to products produced by the firm. Helps decide prioritization in the allocation of the finished resources.

Importance of Demand Forecasting

- Demand forecasting is crucial because it enables organizations to:
  - prepare for future market conditions.
  - meet customer demand efficiently.
  - avoid overproduction or shortages.
  - provide a foundation for strategic planning and operational decision-making.

1. Production Planning
Helps businesses determine the optimal production level, avoiding underproduction or overproduction.



2. Inventory Management

Assists in maintaining the right amount of stock, reducing costs of warehousing or shortages.

3. Financial Planning
Facilitates budgeting and resource allocation by predicting future sales and revenue, predicting future sales and revenue.

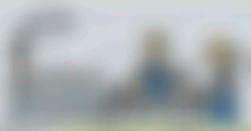
4. Pricing Strategies

Maximize revenue and profitability by adjusting prices based on anticipated demand.

5. Market Competition

Anticipate market trends and customer preferences, staying competitive.

6. Workforce Management



Adequate staffing during peaks, avoiding underutilization during, during low demand.

7. Risk Reduction

Minimizes risks associated with sudden market fluctuations, prepare for uncertainties.

8. Capacity Planning

Production facilities and supply chains are equipped to future demand efficiently.

9. Improved Customer Satisfaction

Timely availability of products, enhancing customer satisfaction and loyalty.

10. Policy Formulation

Infrastructure and resource planning by governments and organizations i... of on future demand forecasts.

Techniques of Demand Forecasting

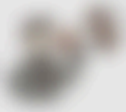
1. **Qualitative Techniques**
   a) **Expert Opinion Method**
   Relies on views from experts, executives, or sales personnel (example: Sales Delphi) – expert panel reaches a consensus through structured discussions.

   b) **Market Research Method**
   Collects customer opinions through surveys, questionnaires, or interviews.
   Suitable for: new products or markets with little data.

   c) **Sales Force Composite Method**
   Inputs from sales team (salespersons with customers).

2. **Quantitative Techniques**
   a) **Time Analysis (Time Series Analysis)**
   Uses historical data with a proper time-series elements, assuming past trends continue.
   Method: simple
   Least Squares Analysis: Fits a straight line to past data (linear) following. Accounts for seasonal fluctuations.

   b) **Moving Average**
   Smooths out short fluctuations by averaging demand over a period, good for stable demand.

   c) **Exponential Smoothing**
   Weighted moving average technique, gives more significance to recent data. Suitable

   Exponential Demand: additional Demand (1 of Process Forecast)

   d) **Regression Analysis**
   Mathematically relates demand (dependent variable) and independent variables (e.g., price, income).

   e) **Econometric Models**
   Complex methods – combines both (1 model) demand theories of variables like price, income, advertising.

   f) **Barometric Method**
   Economic indicators (e.g., GDP, inflation rates) to forecast demand.

   g) **Simulation Models**
   Virtual model of the market to simulate consumer and product under different conditions.

3. **Specialized Techniques**
   a) **Conjoint Analysis**
   Determines consumer different options of an customer for consumer goods.

   b) **Leading Indicator Analysis**
   Uses economic indicators (e.g., housing starts, consumer confidence) to

   c) **Test Market Analysis**
   Launch product in a small market segment to gauge demand before full-scale launch. Helps in going consumers will react

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