Chapter 02 :- Theory of Demand & Supply

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Unit 1 :- Law of Demand & Elasticity of Demand

Effective Demand → Desire + Purchasing power + Willing to buy

- Demand Expressed → Quantity + Given Price + Per period of time → Quantity demand
  - Flow concept
  - DD हमें बताता है की हम किसी Product को कितने के लिए खरीद रहे हैं

*Generally DD > Actually Sold

1.1 What Determines Demand ?

(i) Price of Commodity → P↑ Q↓ v.v → Inversely relation
- Happens bcz → Income & Substitution effect
- Ceteris paribus → ~~Other things remains constant/equal~~

(ii) Price of related Commodity → Ceteris paribus
- Complementary Goods → Consumed together → Relation → Inverse Relation → P_c↑ D↓ v.v
- Substitute/Competing Goods → Satisfy same want → Can used + cost → I ↓ other → Relation → Direct Relation → P_s↑ D↑ v.v

(iii) Disposable Income of the Consumer → Business Manager fully aware
- Nature of Goods
  - Generally → I↑ D↑ v.v → Depends → Nature of Goods
  - Normal Goods → I↑ D↑ v.v → Direct Relation
  - Inferior Goods → I↑ D↓ v.v → Inverse Relation
  - Essential Goods → I↑ D↑ v.v → But Increase in Demand < Increase in Income
    - E.g. Luxury / Prestige Goods ← People become richer
- Nature of Relationship

For Accessing → Current + Future Demand

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(iv) Taste & Preferences of Consumers → Demand Depends → taste + Preferences → Consumer ✓

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External Effects on Utility

→ term coined → James Duesenberry

• Demonstration Effect

→ Desire of People → Emulate consumer behaviour (Copy करना) → others ✓

People Demand → buy or have things → bcz they see → other people able to have them ✓

• Bandwagon Effect

→ Demand ↑ → Other are consuming the same commodity ✓

→ Conform to people → wish to associated with

↳ Group का Part बना रहे Left Out Feel नहीं करना

• Snob Effect

→ Desire of People → Different + Dissociate themselves → Common herd ✓

→ Demand ↓ Consumer Goods → Bcz others are also consuming same.

Veblen Effect

→ American economist ~~Thorstein Veblen~~

↳ Higher price Goods → Consumed ✓ → Status seeking rich people → Satisfy → Conspicuous consp^n ✓

F^n of Price

Consumer Expectations

→ Regarding Future prices → Direct Relation ✓

→ Regarding Income → Direct Relation ✓

→ Regarding Supply → Inverse Relation

↳ S↓ Cur. Demand ↑ V.V

Other Factors :-

- Size of Population → Population ↑ Demand ↑ V.V
- Distribution of Population → Older age Group ↑ → Demand ↑ ; Children age Group ↑ → Demand ↑
  - Migrate → Urban areas → Demand in Rural area ↓
- Level of National Income and its Distribution → Generally → N.I ↑ D ↑
  - Wealth → Unevenly distribute → Rich Pco. < Poor pco. → Propensity to consume ↓ → Demand ↓
  - Evenly distribute → Rich Pco. = Poor pco. → PTC ↑ → Demand ↑

(d) Consumer-Credit facility and interest rates → Availability credit + Low interest Rate → People Borrow ↑ → Demand ↑

(e) Government policies & Regulations
- Taxes ✓ → QD ↓ (Goods की Price ↑ हो जाते हैं)
- Subsidies ✓ → QD ↑ (Goods की Price ↓ हो जाते हैं)
- Ban or Restriction → QD ↓

★ Demand F^n → Relationship Between
- Demand (Dependent variable) ✓
- Determinants (independent / variable) ✓ explanatory

C.P ✓

$$Q_x = F(P_x, Y, P_r)$$

- Q_x → Q^n demand
- P_x → Price
- Y → Income of Consumer
- P_r → Price of Related Good

★ Law of Demand
- Ceteris paribus ✓
- P↓ QD↑ → Inverse Relation

Prof. Alfred Marshall ✓

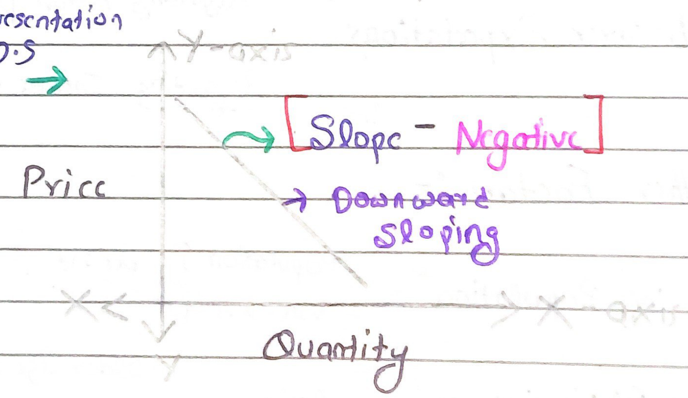
★ Demand Schedule → Table Showing ✓ (C.P ✓)
- Q^n Demanded
- \+ Given price
- \+ Per unit of time

For ex

	Price	Q^n Demanded
A	60	0
B	50	2
C	40	4

Law of Demand ✓

★ Demand Curve → Graphical representation of D.S
- Derives from MU curve



→ [Slope - Negative]
→ Downward sloping

★ Market Demand Schedule → Sum of individual demand Curve

For ex

Price	Quantity Demanded by P	Q	R	Market Demand
0	3	2	1	6
10	2	1	1	4

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★ Market Demand Curve → obtained by Horizontal (lateral) summation of all individual demand curves

★ Rationale of the law of Demand

(1) Price Effect — Substitution effect → Goods closer substitutes, lower cost, lower inconvenience → S.G
of a fall in Price — Consumer real Income ↑, Purchasing Power ↑
↓
Hicks & Allen
↓
explained the law

(2) Utility Maximising behaviour of consumers → Rational consumer → × Pay more ~ lesser satisfaction

(3) Arrival of New consumers → P↓ → More consumer start Buying ✓ → Bcz now be able to buy it

(4) Different uses
- Many commodities → Different/multiple uses
- P↑ → Limited use only
- P↓ → More use → D↑

★ Exceptions to the Law of Demand

(i) Conspicuous goods
- Article of Prestige value + Snob effect + Veblen effect ✓
- Rich People → Consumed Higher price commodity ✓ → Higher prestige value + Higher satisfaction

Sir Robert Giffen → Scottish economist & Statistician

(ii) Giffen Goods
- Exhibit direct Price - Demand relationship → Giffen Goods ✓
- Generally → Inferior Goods → × Close Substitute avai. → Substantial Place ✓ (↓ Consumer Budget)
- Giffen Goods = Inferior Goods
- Inferior Goods ≠ Giffen Good

- Direct Price - Demand Relationship → Upward Sloping DC
- Indirect income - Demand Relationship → Downward Sloping Engel Curve

(iii) Conspicous necessities
- Demand Affect — × Bcz
- Goods → Constant usage ✓ → become necessity of life ✓

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(iv) Future expectations about price

(v) Incomplete Information & Irrational behaviour →

(vi) Demand for Necessaries → Min. q^n necessary commodity → consumed by people ✓ → Irrespective of price changes

(vii) Speculative Goods ⇄ Speculative market → Particularly → Stocks & Shares ✓
⇄ More demanded → P↑
⇄ Less demanded → P↓

★ Expansion & Contraction of Demand ↝ Change in own price ki vajah se Exp. & Contra. of Demand hota hai

- Demand → Total Demand ko Demand kehte hai
- Quantity Demand → Particular price pe kitni Demand hai usse Q.D kehte hai

Contraction of Demand → Fall in Quantity Demanded ✓
→ Upward movement along the demand curve ✓

Expansion of Demand → Same Demand Curve
→ Increase/Rise in Quantity Demanded
→ Downward movement along the demand curve

★ Increase & Decrease in Demand ↝ due to other factors other than price

Increase in Demand → Ex:- Inc. P↑ of substitute goods, Income ↑ etc.
→ Rightward Shift

Decrease in Demand → Ex:- Decrease P↓ of substitute goods, Income ↓ etc.
→ Leftward Shift

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1.6 Elasticity of Demand

Quantative

Elasticity of Demand → Responsiveness of q^n demanded of goods due to Δ in one variable / Factors → Demand Depends

Demand [illegible] Demand को kya change [illegible] Kitna change [illegible]

ΔQ.D
Δ in Factors/Variators

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★ Price Elasticity

- express the response of q^n demand → due to Δ in its price
- Firm Reason → Predict → impact of ΔP on its sales
- Guide firm's profit maximizing pricing decisions

E_p ⇒ −ve (Always)

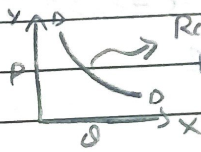
Formula → $\frac{\%\Delta Q}{\%\Delta P}$ (Change in Q^n demand / change in price) Or $\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$ Or $\frac{1}{Slope} \times \frac{P}{Q}$

* Steeper → slope ↑ ↓ed
* Flatter → slope ↓ ↑ed

Types of Elasticity

1) Unitary Elasticity [$E_p = 1$]

- % Δ in Q.D = % Δ in Price
- Diagram →

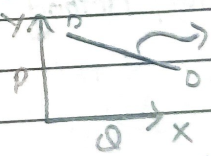


Rectangular Hyperbola

2) Elastic [Relatively Elastic] [$E_p > 1$]

Q.D is relative sensitive

- % Δ in Q.D > % Δ in Price
- Diagram →

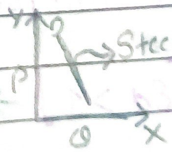


Flatter

3) Inelastic [Relatively Inelastic] [$E_p < 1$]

Q.D is relatively insensitive to ΔP

- % Δ in Price > % Δ in QD
- Diagram →



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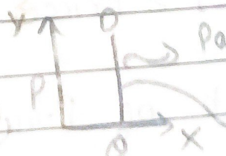
4) Perfectly Inelastic [$E_p = 0$]

Extreme case of price insensitivity

- % Δ in QD = 0 & % Δ in Price = कुछ भी हो
- Diagram →



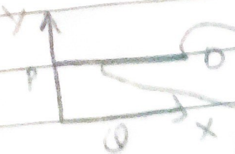
Parallel to Y-axis or Price axis
Vertical DC

under perfectly competitive market

[illegible]

5) Perfectly Elastic [$E_p = \infty$]

- % Δ in Price = 0 & % Δ in QD = कुछ भी हो
- Diagram →



Parallel to X-axis or q^n axis
Horizontal DC

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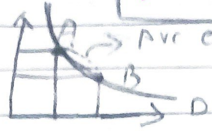
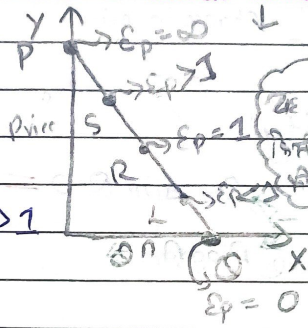
- **Point Elasticity** → Δ in Price → Infinitesimal (बहुत छोटा) — Derivate of → Extremely small
  - Formula → $E_p = -\frac{dq}{dp} \times \frac{p}{q}$
  - Coefficient of P_E or Mid Point Method



- **Arc Elasticity** → Arc elasticity [A point & B point के बीच की Elasticity निकालने को Arc elasticity कहते हैं]
  - जब हमें avg. answer चाहिए & Price वाली का दिया हो तब ये Formula use करेंगे
  - Formula → $E_p = \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$

- **Geometric Method** → Use when → Linear Demand Curve ✓ (→ Straight line demand curve)
  - यह Method सिर्फ elasticity का type बताता है → Know type of elasticity ✓ (→ eg. elastic, inelastic)
  - → Demand curve दोनो axis को touch करना चाहिए
  - $E_p = \frac{\text{Lower Segment}}{\text{Upper Segment}}$
  - Question type → L.S > U.S → Ans → $E_p > 1$
    - → L.S = U.S → $E_p = 1$
    - → Many more



इस Method से किसी भी Point की Elasticity का Type निकाल सकते हैं

- **Total Outlay Method**
  - → Expenditure (P × Q) (→ Purchase) → Derive Relation bet. Price & Exp. (Greatly Related each oth.) ✓
  - → Revenue (P × Q) (→ Sold) → Derive Relation bet. Price & TR (Closely Related each oth.) ✓
  - → Find → type of elasticity only ✓
  - P↑ → Price Effect → TR↑ (Bcz P↑ से incre.)
  - → Q Effect → TR↓ (Bcz P↑ से ... कम sold होंगे)

ΔP ↑↓ → Exp/Rev. → Remain Same

1) Unitary Elastic [Ed = 1] → Price & Exp./Revenue → Same
   - → PE = QE → TR Same

2) Elastic [Ed > 1] → Price & Exp./Revenue → Inverse Relation (P↑ v.v Exp/Rev↓)
   - → QE > PE → So TR↓ & P↑

3) Inelastic [Ed < 1] → Price & Exp./Revenue → Direct Relation (P↑ v.s Exp./Rev.↑)
   - → PE > QE → So TR↑ & P↑

1.5.8 Determinants of Price elasticity of Demand

(i) Availability of Substitutes
- → Close/Perfect Substitute avail. ✓ → Highly Elastic
- → Substitute avail ✗ → Inelastic Demand
  - * But Particular Brand → elastic Demand

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(2) Position of a commodity in a consumer's Budget
- Greater the Proportion of income Spent on commodity → Elastic demand
- Smaller the proportion Spent → Inelastic demand

(3) Nature of the need that a commodity satisfies
- Luxury Goods (needs) → Elastic demand
- Necessities Goods (needs) → Inelastic demand
- Postpone the consumption → ✓ Elastic Demand & v.v

(4) No of uses to which a commodity can be put
- Goods Multiple uses → Elastic Demand
- Goods limited uses → Inelastic Demand

(5) Time period (adjustment time)
- Longer time period + adjustment time ✓ or ↑ → Elastic Demand
- Shorter time period + adjustment time ✗ or ↓ → Inelastic Demand

(6) Consumer habits → Habitual consumer of a commodity → Inelastic demand (↳ Normative POP)

(7) Tied Demand → Complementary Goods → Inelastic Demand

(8) Price Range
- High price Range → Inelastic Demand
- Lower price Range → Inelastic Demand
- Middle price Range → Elastic Demand

(9) Minor complementary items → Demand for cheap complementary items (↳ use together) → Costlier product → Inelastic Demand

1.6 Income Elasticity of Demand → Responsiveness of q^n demanded due to ΔY

- % Method

$$E_i = \frac{\%\Delta Q}{\%\Delta Y}$$ (Change in Demand / Change in Income)

Or

$$\frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$$

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- Proportionate

Prop. of Income Spent on Goods → Increases → $E_i > 1$ (Elastic)

Prop. of Income Spent on Goods → Decreases → $E_i < 1$ (Inelastic)

$E_i = 1$

In Case of Goods

Normal Goods → $E_i = +ve$ (N.G ka Elasticity positive hoti)

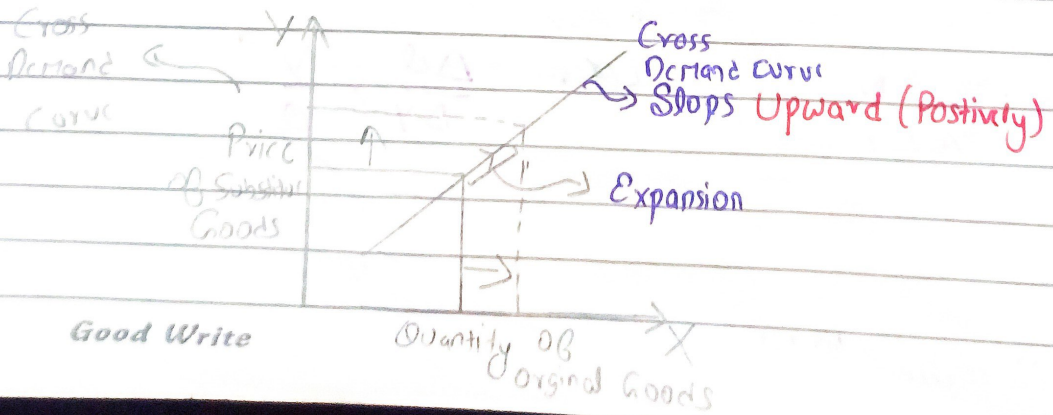
- Luxury → $E_i > 1$ → Elastic
- Essentials → $E_i < 1$ → Inelastic

Inferior Goods → $E_i = -ve$ (Inferior Good ka Elasticity Negative hoti hai)

1.6.2 Cross Elasticity of Demand

Price of Related Goods & Demand
- Complementary Goods
- Substitute Goods

1. Substitute Goods → Direct Relation ⇝ $P_S \uparrow_{rev} D_O \uparrow$



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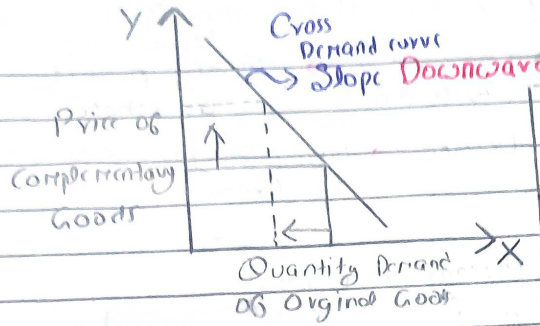
2. Complementary Goods → Indirect/Inverse Relation ⇝ $P_c \uparrow$ v.v $D_o \downarrow$



- Weak comp. → Steeper Downward Sloping Cross Demand curve
- Strong comp. → Flatter Downward sloping CDC
- Close Subst. → Flatter Upward sloping CDC
- Remote Subst. → Steeper Upward sloping CDC

- Elasticity (ε_c) = % Δ in demand (Tea) / % Δ in Price of Substitute Goods (coffee) OR $\frac{\Delta Q_T}{\Delta P_C} \times \frac{P_C}{Q_T}$
  - ε_c ↓ Cross Elasticity

- Weak Complements → ε_c = Slightly below 0
- Strong Complements → ε_c = -ve + Large
- Perfect Complement → ε_c = -ve + ∞

Sign Importance :-

★ $\varepsilon_c \Rightarrow$ -ve (Negative) ↘ Inverse Relation (Complementary Goods)

★ $\varepsilon_c \Rightarrow$ +ve (positive) ↘ Direct Relation (Substitute Goods)

- Substitute Goods Elasticity

- Perfect Subs. → $\varepsilon_c = \infty$
- Close Subs. → ε_c = positive + large
- Remote Close subs. → ε_c = +ve + small
- Totally Unrelated → ε_c = Zero

1.8 Advertisement Elasticity

Same Formula

Responsiveness of goods demand due to Δ in firm's spending on advertisement

E_a ↗ typically positive, 0 to ∞ Demand

1.9 Demand Forecasting

- Meaning
  - Forecasting → Refers → Knowing + Measuring the Status / Nature of an event
  - Forecasting of Demand → art ✓ + Science ✓ → Predicting the probable Demand
    - Variable before it occurs
- Scope
  - D.F → Can be International level
  - Good Necessary Trade-off ✓ → Cost of Forecasting / Benefits from Such Forecasting
  - Depending upon type of Biz

• Types of Forecasts

(1) Macro level Forecasting → पूरी economy का Forecasting

(2) Industry Level Forecasting → Concerned with demand → Industry product as whole

(3) Firm level Forecasting → Demand → Particular Firm's Product

→ Based on time period of Demand Forcasts

(i) Short term demand Forcasting → Tactical decisions (Part of strategic decision) → usually 6 months ✓ or less than 1 year ✓

(ii) Long term demand Forcasting → Strategic decision → 2 to 5 years ✓ or more year ✓

★ Demand Distinctions

a) Producer's Goods → Used for prodⁿ of other goods → Consumer goods ✓ or Producers goods ✓
and Consumer Goods → Used for final consumptⁿ

b) Goods → Durable → ✗ quickly wear out, consumed more than once ✓ → yield utility over a period of time
(Derivie Demand)
Non-Durable → ✗ Consumed more than once

c) Demand → Derived (Dependent Demand) → Demand for commodity → Due to Demand for Parent Goods ↑
Producer Goods + Industrial input ✓
Complimentary Goods ✓
Autonomous → Demand for commodity → Independent ✓

d) Demand → Firm's product → Total Demand Product → Particular firm
Expressed as % of Ind. Demand → Signifies market share of firm
Industry → Total Demand product → particular Industry

e) Demand → Short-Run → Immediate reaction ✓ → To change (Price related commodities etc)
Long Run → Exist over a long period
After enough time → Market adjust ✓ → To New situation

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- Factor Affecting Demand for Non-Durable Consumer Goods

(i) Disposable Income → Demand Depends upon → D.I ✓ [Personal Inc. − Personal Taxes]

(ii) Prices ✓ → Own prices; Prices of related Goods → Demand Depends ✓

(iii) Demography → Demand depends upon population, human etc.

→ Non-Durable Goods → Repeated Demand ✓ → Depend upon Nature of N.D.G.
→ Current consumption only

- Factor Affecting the Demand For Durable-consumer Goods

(i) Consumer can postpone → Replacement of D.G.

(ii) Goods require → Special Facilities for their use.

(iii) Consumer Durables → Used by more than one person.

(iv) Greater the Current holding of D.G = Greater will be → replacement demand (imp. component)

(v) Demand for Consumer Durables → Influenced ✓ → by their price ✓; Credit facilities ✓

- Factor Affecting the demand for producer Goods :-

Producer/Capital Goods → Demand depends upon → Rate of profitability of user Industry ✓ + Size of Market of the user Industry ✓

Estimating Demand for Producer Goods → Growth prospects of user Industries ✓ + Norm of consumption of capital Goods/Unit of installed capacity ✓

Investment in producer Goods → Greater → When → Lower cost of Borrowing; Lower interest rates

Higher profit making Prospectus → Greater inducement to demand capital Goods

Firm are optimistic (Good Write About selling a higher Output in Future) → Greater incentive to invest in producer Goods

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1.7 Methods of Demand Forecasting

(i) Survey of Buyer's Intentions
- Direct method to estimating Dem. → **Short Run** ✓ → To ask customer → What they are planning to buy
- Direct interview of potential customers.

Survey conducted by —
- Complete enumeration method → Nearly all potential customers → interviewed ✓
- Sample survey method → Scientifically chosen → Sample of potential customers
- End use method → Appliance → Identification of final users
  - Producer Goods

Method
- Limitation → Burden of Forecast. → consumer ✓
  - ↳ consumer may themselves misjudge their requirement
  - इस S.M का अनुभव कम होता है
- Useful → Bulk of sale → Industrial Producers ✓

(ii) Collective opinion Method → Short Run
- Salesman → Estimate expected sales → in their respective territories ✓
- Firms → wide network of sales personnel ✓
- Method → Subjective + Personal opinion can possibly influence
  - Salesman किन पहले से Demand Forecasts होते हैं (बस) → Unaware of the broader economic changes

Also known
- Sales force opinion method
- Grass roots approach

(iii) Expert Opinion Method →
- Also **Delphi technique**
- Developed by Olaf Helmer at Rand Corpor. of USA

(iv) Statistical Methods
- Superior Method ✓
- More reliable, Scientific + Free from subjectivity

(a) Trend Projection Methods
- Considered as 'Naive' Approach
- Use by → Firm existence for long time + Accumulated considerable Data → Diff. Time period ✓
- Data → Chronologically arranged → 'time series' → Factor responsible for past Trend → Continue in same manner in future Demand

Also known → Classical Method

(i) Graphical Method → Free hand curve ✓
↓
Free hand projection Method
Limitation → Show the trend ✓
but reliable ✗

(ii) Fitting Trend Method → Mathematical Procedure → Fitting a trend line → Set of Observed data
Provides fairly reliable ✓
↓
Least Square Method & very popular method
Used ✗ → Sharp turning points → troughs / peaks → Cyclical trend ✓

(b) Regression Analysis → Relationship Between → Dependent Demand [Dependent variable]
Independent variable [Explanatory variable] → Factors ✓ → Influence
↓
Most popular Method
Independent variable में change होने पर Demand में कितना फर्क आएगा।

(v) Controlled Experiments → Future demand Estimate → Conducting market studies / experiments on Consumer Behaviour
↓
Market Experiment Method
Assumptions → Other factor remains constant
Controlled experiment ✓ → Market division → Homogeneous (& same income, taste etc.)
Limitations → Used Relatively ↓ + Expensive ✓ & Time Consuming
Risky → Leads to → Unfavourable Reaction ✓ (Dealer / Consumer / competitor)

• Better version of this Method → 'Controlled Laboratory Experiments' + 'Consumer Clinics'

(vi) Barometric Method → Study of economic Behaviour
Economists use → Economic Indicators → To Forecasts ✓
↓
Leading / Coincident / Lagging
Leading: up or down → ahead of some other series
Coincident: up or Down → Simultaneously + Do Not offer predictive insight
Lagging: Follow a Definite time lag

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