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Objectives

- To introduce the economic concepts
- To familiarize the importance of economic approaches in managerial decision making
- To understand the applications of economic theories in business decisions
Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books

1. Yogesh Maheswari, Managerial Economics, Phi Learning, New Delhi, 2005.
To understand that economics is the study of mankind’s attempt to satisfy their unlimited wants with the help of limited resources. Economics: 1) Micro Economics and 2) Macro Economics 3) Monetary Economics and 4) Fiscal Economics. Microeconomics deals with the basic principles of economics like the law of demand, the law of supply, consumption, production, etc. Managerial economics deals with the principles of microeconomics as applied to managerial decision-making. Also to understand the circular flow of economic activity – chain in which production creates income, income leads to spending, and spending, in turn, leads to production activity.
Lecture Outline...

- Why study economics?
- Managerial economics
- Nature of managerial economics
- Circular flow of economic activity
- Objectives of the firm
People have a limited number of needs that must be satisfied for survival (material / psychological/emotional needs etc.)

To enjoy a better standard of living, people would go beyond the basic level as human wants are unlimited.

Want: desire for the consumption of goods and services.

Therefore the basic economic problem is that the resources are limited but wants are unlimited which forces us to make choices.

Economics: allocation of resources, the choices that are made by economic agents.

Economy: system which attempts to solve this basic economic problem. There are different types of economies; household economy, local economy, national economy, and international economy but all economies face the same problem.

- What to produce?
- How to produce?
- When to produce?
- For whom to produce?
➢ **Economics**: how individuals and societies choose to use scarce resources (micro vis-à-vis macro).

➢ **The world’s resources are limited and scarce.**

➢ **The resources which are not scarce are called** free goods.

➢ **Resources that are scarce are called** economic goods.

➢ **Vital for managerial decision making, designing and understanding public policy, and appreciating how an economy functions.**

➢ **Students**: What goes on in the world and how it can be used as a practical tool for decision making.

➢ **Managers and CEO’s**: Understanding of how market forces create both opportunities and constraints for business enterprises.

➢ **Managerial Economics**: how scarce resources are directed most efficiently to achieve managerial goals. It is a valuable tool for analyzing business situations to make better decisions. It is well integrated with other disciplines.
Managerial Economics: Definitions

➢ Prof. Evan J Douglas: Managerial Economics is concerned with the application of economic principles and methodologies to the decision making process within the firm or organization under the conditions of uncertainty.

➢ Milton H Spencer and Louis Siegelman: Managerial Economics is the integration of economic theory with business practices for the purpose of facilitating decision making and forward planning by management.

➢ Mc Nair and Miriam: Managerial Economics consists of the use of economic modes of thoughts to analyze business situations.
Managerial Economics: Nature

- Concerned with the analysis of **finding optimal solutions** to decision-making problems of businesses/firms (microeconomic in nature)

- Practical subject therefore it is **pragmatic**

- Describes, what is the observed economic phenomenon (positive economics) and prescribes what ought to be (normative economics)

- Based on strong economic concepts (conceptual in nature)

- Analyses the problems of the firms in the perspective of the economy as a whole (macro in nature)

- It helps to find an optimal solution to the business problems (problem-solving)

- **Important role to play by helping managements in successful decision making and forward planning. Applies economic principles and concepts towards adjusting to various uncertainties faced by a business firm.**
Circular Flow of Economic Activity

➢ Individuals own or control the resources

➢ Inputs – Production Process – Output(s)
  - Land – natural, renewable, and non-renewable
  - Labour – human capital
  - Capital – working and fixed
  - Entrepreneurship – organize production and take risks

➢ Effective allocation of resources
  - Consumers (to maximize satisfaction)
  - Workers (to maximize wages)
  - Firms (to maximize the output and profit)
  - Government (to maximize the welfare of the society)

Circular flow of activity is a chain in which production creates income, income generates spending, and spending, in turn, induces production.

Clockwise: Circular flow of economic activities
Anticlockwise: Circular flow of goods and services
Nature of the Firm

➢ **Firm**: association of individuals who have organized themselves for the purpose of turning inputs into output

➢ Organizes the factors of production to produce goods and services to fulfill the needs of the households

➢ **Objectives**

  - To achieve the Organizational Goal
  - To maximize the Output
  - To maximize the Sales
  - To maximize the Profit of the Organization
  - To maximize the Customer and Stakeholders Satisfaction
  - To maximize Shareholder’s Return on Investment
  - To maximize the Growth of the Organization
To understand that demand analysis is an important part of economic analysis. The manufacturers produce and supply goods to meet demand. When the demand and supply are equal the economic conditions of the country is in equilibrium position. This demand and supply are market forces that give dynamism to the economic conditions of the country. The demand is not always static. The changes in demand or elasticity of demand give room for managerial decision-making like what to produce, how much to produce, when to produce, and where to distribute the products.
Lecture Outline...

- Law of demand
- Determinants of demand
- Types of demand
- Exceptional demand curve
- Elasticity of demand
- Price elasticity
- Income elasticity
- Cross elasticity
- Demand forecasting
Demand

➢ **Demand**: Ability and willingness to buy a specific quantity of a commodity at the prevailing price in a given period of time.

Therefore, demand for a commodity implies the desire to acquire it, willingness, and the ability to pay for it.

➢ **Law of Demand**: The quantity of a commodity demanded in a given time period increases as its price falls, *ceteris paribus*.

➢ **Demand Schedule**: A table showing the quantities of a good that a consumer is willing and able to buy at the prevailing price in a given time period.

<table>
<thead>
<tr>
<th>Price of Coke (200 ml) in INR</th>
<th>Quantity Demanded</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
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<td>35</td>
<td>5</td>
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<td>20</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

➢ **Demand Curve**: A curve indicating the total quantity of a product that all consumers are willing and able to purchase at the prevailing price level, holding the prices of related goods, income and other variables as constant.
Change in Demand: Shift vis-à-vis Extension/Contraction

- Shifts in Demand: Shift of the demand curve (rightward/upward/increase or leftward/downward/decrease) occurs when the determinants of demand change.
Change in Demand: Shift vis-à-vis Extension/Contraction

- Extension or Contraction in Demand: Movement along the demand curve (only due to price)
Demand Function: describe how much of a commodity will be purchased at the prevailing prices of that commodity and related commodities, alternative income levels, and alternative values of other variables affecting demand.

\[ Q_dX = f(P_x, P_r, Y, T, E_y, E_p, Adv...) \]

Where,

- \( Q_dX \) is the quantity demanded of good ‘X’
- \( P_x \) is the price of good X
- \( P_r \) is the price of a related good
- \( Y \) is the income level of the consumer
- \( T \) is the taste and preference of the consumer
- \( E_y \) is the expected income
- \( E_p \) is the expected price
- \( Adv \) is the advertisement cost
Demand

Determinants of Demand

- Price of the good (-ve relationship)
- Price of related goods (substitutes: -ve and complementary goods: +ve)
- Consumers income (+ve)
- Taste, preference, fashions, and habits
- Population (+ve)
- Money circulation (+ve)
- Value of money
- Weather condition (tender coconut)
- Advertisement
- Consumer’s future price expectation (disaster)
- Government policy (taxation: -ve)
- Credit facilities
- Multiplicity of uses of goods (+ve)
Demand

Types of Demand

- Direct (fabric) and indirect (cotton) demand
- Derived demand (petrol ← car) and autonomous demand (mobiles)
- Durable (used more than once: TV) and non-durable goods (single use: band-aid) demand
- Firm (Dove soap) and industry demand (steel)
- Total market (pencil) and market segment (pencil for kids) demand
- Short-run and long-run demand
- Joint demand (car+petrol) and composite (iron for several uses) demand
- Price demand, income demand and cross demand
Market Demand

- Horizontal summation of the demand curves of all the consumers in the market

Exceptional Demand Curves

- **Giffen Goods**: Robert Giffen of Ireland observed some special type of inferior goods like potato (Giffen paradox)
- **Conspicuous Consumption / Veblen Effect**: Thorsten Veblen propounded for goods like diamonds
- **Conspicuous Necessities**: Purchase of smart phones owing to lifestyle
- **Ignorance**: attributed to brand orientation
- **Emergencies**: Sanitizer during COVID-19
- **Future Changes in Prices**: Stock market products
- **Change in Fashion**: CD to Flash disk
- **Demonstration Effect**: Low income groups imitating the consumption pattern of high income groups
- **Snob Effect**: Pride of owing unique products
- **Speculative Goods/ Outdated Goods/ Seasonal Goods**: Shares/CD/Ice-cream
- **Goods in Short Supply**: Antique
Recap of Past Lecture(s)
Elasticity of Demand: degree of responsiveness of the demand for a commodity due to a fall in its price

Types: Price, Income and Cross elasticity

A. Price Elasticity ($E_p$): Proportionate change in the quantity demanded ÷ Proportionate change in price

$$E_p = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$$

- Price Elasticity Determinants: Availability of substitutes and time
  - Better substitutes, higher $E_p$
  - Longer period, higher $E_p$
  - $E_p$ is lower for necessities in comparison to luxuries

- $E_p$ depends on nature of the commodity, extent of use, range of substitutes, income level, proportion of income spent on the commodity, urgency of demand / postponement of purchase, durability of a commodity, purchase frequency of a product / recurrence of demand, and time.
Demand: Price Elasticity

- **Price Elasticity Types**

  - Relatively Elastic Demand (>1)
  - Perfectly Elastic Demand (∞)
  - Relatively Inelastic Demand (< 1)
  - Perfectly Inelastic Demand (0)
Demand: Price Elasticity

- Price Elasticity Types

Unit Elasticity of Demand (1)
B. Income Elasticity: Proportionate change in the quantity demanded ÷ Proportionate change in income

\[
\frac{\Delta Q}{Q} \div \frac{\Delta I}{I} = E_i
\]

- **Types:** Zero, Negative, Unitary, Elastic and Inelastic

  - **Zero Income Elasticity:** The increase in income of the individual does not make any difference in the demand for that commodity \((E_i = 0)\)
  - **Negative Income Elasticity:** The increase in the income of consumers leads to less purchase of those goods \((E_i < 0)\)
  - **Unitary Income Elasticity:** The change in income leads to the same percentage of change in the demand \((E_i = 1)\)
  - **Elastic Income Elasticity:** The change in income increases the demand for that commodity more than the change in the income \((E_i > 1)\)
  - **Inelastic Income Elasticity:** The change in income increases the demand for the commodity but at a lesser percentage than the change in the Income \((E_i < 1)\)
Demand: Income Elasticity

- Income Elasticity for Superior and Inferior Goods
C. Cross Elasticity: Proportionate change in the quantity demanded ÷ Proportionate change in income

\[
\frac{\Delta Q_A}{Q_A} \div \frac{\Delta P_B}{P_B} = E_c
\]

- **Types:** Substitutes (+ve) and Complementary (-ve)

**Significance of Elasticity of Demand**

1. In production i.e. in deciding the quantity of goods to be produced
2. Price fixation i.e. in fixing the prices not only on the cost basis but also on the basis of prices of related goods.
3. In distribution i.e. to decide as to where, when, and how much etc.
4. In international trade i.e. what to export, where to export
5. In foreign exchange
6. For nationalizing an industry
7. In public finance
Forecasting is the estimation of a future situation or event, under given conditions

A tool for decision making

<table>
<thead>
<tr>
<th>The major short run decisions</th>
<th>The major long run decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✴ Purchase of inputs</td>
<td>✴ Expansion of existing capacity</td>
</tr>
<tr>
<td>✴ Maintaining of economic level of inventory</td>
<td>✴ Diversification of the product mix</td>
</tr>
<tr>
<td>✴ Setting up sales targets</td>
<td>✴ Growth of acquisition</td>
</tr>
<tr>
<td>✴ Distribution network</td>
<td>✴ Change of location of plant</td>
</tr>
<tr>
<td>✴ Management of working capital</td>
<td>✴ Capital issues</td>
</tr>
<tr>
<td>✴ Price policy</td>
<td>✴ Long run borrowings</td>
</tr>
<tr>
<td>✴ Promotion policy</td>
<td>✴ Manpower planning</td>
</tr>
</tbody>
</table>
Demand: Forecasting

Why Demand Estimation and Forecasting?

➢ To predict the future demand and assessing its effect on the operation of the firm/market.

➢ Assessing the magnitude that demand will assume at some future point in time.

➢ It helps to reducing uncertainty, making production plan, allocation of resources and to formulate marketing strategies.
Demand: Forecasting

Stages in Demand Estimation and Forecast

1. Identify the Market/Product
2. Collect the Data
3. Select Methods
4. Implement Methods
5. Evaluate Methods
6. Use Forecasts and Validate
Demand: Forecasting

Factors to be considered in demand estimation

- Time frame
  - Short-term, medium-term or long-term
- Level of demand forecasting
  - Macro-level, industry-level or firm-level
- General or Product specific forecast
- Demand for new or already established products
- Types of products
  - Producer goods, consumer goods, services etc.
- Product or market specific factors
  - Competition, market condition, consumer’s psychology
Demand: Forecasting

Types of Forecasting Methods

- Subjectively using judgment; intuition and commercial knowledge about the product
- Objectively using statistical analysis of past data
- Combination of both
- Broadly classified into
  - A. Qualitative methods
  - B. Quantitative methods

1. Survey of buyers’ intension
2. Delphi method
3. Expert opinion
4. Collective opinion
5. Naïve model
6. Smoothing techniques
7. Time series / trend projection
8. Controlled experiments
9. Judgmental approach
# Demand: Forecasting

## A. Qualitative Methods

<table>
<thead>
<tr>
<th>Executive Opinion</th>
<th>Market Research</th>
<th>Delphi Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>A group of managers / high level executives meet and collectively develop a forecast for demand</td>
<td>This is a more systematic method involving questionnaires, surveys, sampling, and information analysis to determine the consumer preferences and assess demand accordingly.</td>
<td>Demand forecast is the product of a consensus among a group of experts while maintaining their anonymity. A coordinator sends data and questions to the experts, their comments are shared, discussed, and a consensus is reached. The process is time consuming.</td>
</tr>
</tbody>
</table>
## Demand: Forecasting

### B. Quantitative Methods

<table>
<thead>
<tr>
<th>Time Series Models</th>
<th>Causal Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>These models consider the past patterns of demand and predict the future demand based on the underlying patterns.</td>
<td>These models assume that the forecast variable is related to other variables and predictions are based upon those associations.</td>
</tr>
</tbody>
</table>
Criteria to choose a method for forecasting

➢ Accuracy
➢ Plausibility
➢ Durability
➢ Flexibility
➢ Availability

Forecasting vis-à-vis Prediction

➢ There is a clear distinction between “steady-state forecasting”, where the future is expected to be much like the past, and “what-if forecasting” where a multivariate model is used to explore the effect of changing policy variables.
Time Series / Trend Projection

- **Linear trend**: \( Y = a + b \, X \)
- **Quadratic trend**: \( Y = a + bX + cX^2 \)
- **Cubic trend**: \( Y = a + bX + cX^2 + dX^3 \)
- **Exponential trend**: \( Y = a \, e^{b/x} \)
- **Double log trend**: \( Y = a X^b \)

**Linear Trend**

\[ Y = a + b \, X \]

- \( Y \) is the demand
- \( X \) is the time period
- \( a \) is the intercept
- \( b \) is the slope coefficient

\[ \sum Y = na + b \sum X \] (Eq. 1)
\[ \sum XY = a \sum X + b \sum X^2 \] (Eq. 2)

**Solve,**
### Demand: Forecasting

**An illustration**

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>22734</td>
<td>24731</td>
<td>31489</td>
<td>44685</td>
<td>55319</td>
<td>91021</td>
<td>146234</td>
<td>107887</td>
<td>127483</td>
<td>97275</td>
</tr>
</tbody>
</table>

**Task:** Estimate the sales for 2012, 2015 and fit a linear regression equation and draw a trend line.

<table>
<thead>
<tr>
<th>Year</th>
<th>X</th>
<th>Sales (Y)</th>
<th>XY</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1</td>
<td>22734</td>
<td>22734</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>24731</td>
<td>49462</td>
<td>4</td>
</tr>
<tr>
<td>2004</td>
<td>3</td>
<td>31489</td>
<td>94467</td>
<td>9</td>
</tr>
<tr>
<td>2005</td>
<td>4</td>
<td>44685</td>
<td>178740</td>
<td>16</td>
</tr>
<tr>
<td>2006</td>
<td>5</td>
<td>55319</td>
<td>276595</td>
<td>25</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
<td>91021</td>
<td>546126</td>
<td>36</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>146234</td>
<td>1023638</td>
<td>49</td>
</tr>
<tr>
<td>2009</td>
<td>8</td>
<td>107887</td>
<td>863096</td>
<td>64</td>
</tr>
<tr>
<td>2010</td>
<td>9</td>
<td>127483</td>
<td>1147347</td>
<td>81</td>
</tr>
<tr>
<td>2011</td>
<td>10</td>
<td>97275</td>
<td>972750</td>
<td>100</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
\sum X &= 55 \\
\sum Y &= 748858 \\
\sum XY &= 5174955 \\
\sum X^2 &= 385
\end{align*}
\]

\[
\begin{align*}
\sum Y &= na + b\sum X & \text{(Eq. 1)} \\
\sum XY &= a\sum X + b\sum X^2 & \text{(Eq. 2)}
\end{align*}
\]

Substitute the values,

\[
\begin{align*}
748858 &= 10a + 55b & \text{(Eq. 1)} \\
5174955 &= 55a + 385b & \text{(Eq. 2)} \\
5242006 &= 70a + 385b & \text{(Eq. 1 \times 7)} \\
67051 &= 15a & \text{(Eq. 3 – Eq. 2)}
\end{align*}
\]

\[
\begin{align*}
a &= 4470.07 \\
b &= 12802.8
\end{align*}
\]

Pondicherry University (A Central University)
Demand: Forecasting

\[ Y = a + bX \]

\[ Y = 4470.07 + 12802.8X \]

Sales for 2012 = 4470.07 + 12802.8 (11) = 145300.87

Sales for 2015 = 4470.07 + 12802.8 (14) = 183709.27

<table>
<thead>
<tr>
<th>Year</th>
<th>X</th>
<th>Sales (Y)</th>
<th>XY</th>
<th>X²</th>
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\[ \sum X = 55 \]
\[ \sum Y = 748858 \]
\[ \sum XY = 5174955 \]
\[ \sum X^2 = 385 \]
To understand that supply is an independent economic activity but it is based on the demand for commodities. The managers’ ability to make more profits depends upon his ability to adjust the supply to the demand without creating a surplus while at the same time not creating a scarcity that will spoil the image of the company in the eyes of the public. Supply is also sometimes inelastic and sometimes elastic. The managers have to take wise decisions to maximize the profits of the firm.
Lecture Outline...

- Law of supply
- Determinants of supply
- Elasticity of supply
- Factors influencing supply
Supply

➢ Supply: Various quantities of the commodity which a seller is willing and able to sell at different prices in a given market at a point of time, other things remaining constant.

➢ Law of Supply: Increase in price will lead to an increase in quantity supplied and *vice versa, ceteris paribus*.

➢ Supply Schedule: A table showing the quantities of a good that a producer is willing and able to sell at the prevailing price in a given time period.

➢ Supply Curve: A graphical representation of how much of a commodity a firm sells at different prices.

   ▪ The supply curve slopes upward from left to right.

   ▪ Therefore, the price elasticity of supply will be positive.
Determinants of Supply

- The cost of factors of production
- The state of technology
- External factors
- Tax and subsidy
- Transport
- Price
- Price of other goods

Elasticity of Supply ($E_s$)

- Responsiveness of a quantity supplied to a unit change in price of that commodity
- Proportionate change in the quantity supplied ÷ Proportionate change in price

$$E_s = \left[ \frac{\Delta Q_s}{Q_s} \right] \div \left[ \frac{\Delta P}{P} \right]$$
Kinds of Supply Elasticity

➢ **Perfectly inelastic**: If there is no response in supply to a change in price ($E_s = 0$)
➢ **Inelastic supply**: The proportionate change in supply is less than the change in price ($E_s = 0$ to $1$)
➢ **Unitary elastic**: The percentage change in quantity supplied equals the change in price ($E_s = 1$)
➢ **Elastic**: The change in quantity supplied is more than the change in price ($E_s = 1$ to $\infty$)
➢ **Perfectly elastic**: Suppliers are willing to supply any amount at a given price ($E_s = \infty$)

Factors influencing the Elasticity of Supply

➢ Nature of the commodity (perishables: less elastic; durable: more elastic)
➢ Operational time period for production (short: less elastic; long: more elastic)
➢ Scale of production (small scale: less elastic; large scale: more elastic)
➢ Size of the firm and number of products (diverse products: more elastic)
➢ Natural factors (farm commodities: inelastic)
➢ Nature of production (artistic works: more elastic)
Lesson 1. The Fundamentals of Managerial Economics
➢ Why study economics?
➢ Managerial economics
➢ Nature of managerial economics
➢ Circular flow of economic activity
➢ Objectives of the firm

Lesson 2. Demand Analysis
➢ Law of demand
➢ Determinants of demand
➢ Types of demand
➢ Exceptional demand curve
➢ Elasticity of demand
➢ Price elasticity
➢ Income elasticity
➢ Cross elasticity
➢ Demand forecasting

Lesson 3. Supply Analysis
➢ Law of supply
➢ Determinants of supply
➢ Elasticity of supply
➢ Factors influencing supply
Managerial economics is concerned with the application of economic concepts and economic analysis to the problems of formulating rational managerial decisions.

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