**UNIT-1**

**INTRODUCTION TO MANAGERIAL ECONOMICS**

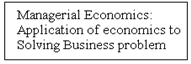
**Introduction**

Economics is a study of human activity. Both at human activity in individual and national level. The economists of early age treated economics merely as the “Science of wealth”. Every one of us is involved in efforts aimed of earning money and spending this Money to satisfy our wants such as food, clothing, shelter and others. Such activities of earning and spending money are called Economics activities. It was only during the 18th Century that “Adam Smith”, the father of economics defined economics as the study of nature and uses of national wealth.

Managerial Economics is the application of the tools of economic Analysis in decision making in Actual business Situations. It is the branch of economics which serve as a link between abstract theory and managerial practice. It is based on economic analysis for identifying problems, organizing information and evaluating alternatives.

**Definition:**

* According to McNair and Merriam “Managerial economics is the use of economic modes of thoughts to analyses business.
* According to Men field “managerial economics is concerned with the applications of economic concept and economics to the Problems of Formulating rational decision making.
* According to Spencer and Seigelman “managerial economics is the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by the management.
* According to Hague” Managerial economics is the fundamental academic subject which seeks to understand and analyse the business problems and make suitable solutions”

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**Micro & Macro of Managerial Economics**

**Macro Economics**: It deals with economic environment in which the firm operates.

* The Economy in which firm operates is predominantly a free enterprise economy
* The present day economy is under giving rapid technological and Economic changes
* The Government intervening in the economic affairs has increased in the recent times and is likely to go up further.

**Micro Economics**:

It deals with the problems of an individual firm, Industry etc. it helps the Organization in such

Way that the available resources are efficiently, it is also called “Theory of Firm”

**NATURE OF MANAGERIAL ECONOMICS**

Managerial economics is perhaps the youngest of all the social sciences. The other features of managerial economics are explained as follows:

* **Close to Micro Economics**: Managerial economics is concerned with finding the solution for different managerial economics problems of a particular firm.
* **Operates against the back drop of a Macro economics**: the macro economics conditions of the economy are also seen as limiting factors for the firm to operate. The managerial economist has to be aware of the limits set by the macro economics conditions such as Government, industrial policy and inflation.
* **Normative statement**: usually includes (or) implies the words ‘ought’ (or) ‘should’. They reflect peoples moral attitudes are expressions of what a term of people should do.

Eg: It deals with statements such as ‘Government of India should open up the economy’ such statements are based on value judgment and express views of what is good (or) bad, right (or) wrong. One problem with normative statement is that they cannot be verified by looking at the facts, because they mostly deal with the future.

* **Applied in nature**: Models are built to reflect the real life complex business situations, these models are of immense help to manage for decision making. In managerial economics we also employ case study method to conceptualize the problem, identify the alternatives and determine the best course of action.
* **To Evaluate each alternatives**: Managerial economics provides an opportunity to evaluate each alternatives in terms of its costs and revenues. The managerial economist can decide which is the better alternative to maximize the profits for the firm.
* **Interdisciplinary**: The contents tools, techniques of managerial economics are drawn from different subjects such as economics, Management, Mathematics, Statistics, Psychology, Organizational Behavior, Sociology etc.
* **Assumptions & Limitations**: Every concepts and theory of Managerial economics is based on certain assumptions and as such their validity is not universal.

**SCOPE OF MANAGERIAL ECONOMICS**

Managerial Economics has close connections with economic theory, Mathematics, operation research and the theory of decision making.

* **Production decision:**
* **Cost Control decisions**: This analysis is necessary for making efficient and effective managerial decisions. All these decisions taken by the manager are almost always dictated by the cost involved in that particular decision. If a detailed analysis and estimation is done, the firm can move up on effective profit management.
* **Pricing Decisions:** it is very important area of managerial economics. The success of business firm largely depends on the correctness of the price decisions taken by the firm. The important aspects deals in the area are pricing methods, differential pricing, price forecasting etc.
* **Make of buy decision:**
* **Inventory control decision:**
* **Demand Analysis & Forecast**: A major part of managerial decision making depends on accurate estimates of demand. Before production schedule can be prepared & resources employed a forecast of future sales is essential. Demand analysis and forecast for business planning occupies a strategic place in managerial economics.
* **Profit planning decision:** Business firms are generally organized for the purpose of making profits and in the long run, profit provide the chief success. It mainly deals with |measurement of profit, profit policies and Techniques of profit planning like B.E.A (Break Even Analysis).
* **Capital Budgeting (or) Investment Decision**: it involves commitment of large funds, which determine the fate of the firm. The future success (or) failure greatly depends on investment decisions made today. The capital budgeting decisions like expansions of a firm, replacement decisions of a firm, cost of capital, rate of return.

**MANAGERIAL ECONOMICS WITH OTHER SUBJECTS**

Managerial economics is clearly linked with many other disciplines such as Economics, Accountancy, Mathematics, Statistics, Operation Research, Psychology and Organizational Behavior.

* **Managerial Economics-Economics:** The concepts of managerial are basically economic concepts. If economics deals with theoretical concepts, Managerial economics is the application of these in the real life. It addresses several empirical such as demand functions, cost functions, revenue functions and so on. Economics and managerial economics, both are concerned with the problems of scarcity and resources allocations. If the economist is concerned with study of markets the managerial economists is interested in studying the impact of such markets on the performance of a given firm.

* **Managerial Economics-Operation Research**: Decision making is the main focus in operations research and managerial economics. If managerial economics focuses on “problems of decision making”. Operations research focuses on solving the managerial problems. In other words operations research is the tool for finding the solution for many managerial problems.
* **Managerial Economics-Mathematics**: managerial economist is concerned with estimating & predicting the relevant economics factors for decision making and forward planning. In this process he extensively makes use of the tools and techniques of Mathematics such as Algebra, Calculus, Vectors, Input-output tables and others. Mathematics Facilitates derivations and exposition of economic Analysis.
* **Managerial Economics-Statistics**: It deals with different techniques to analyses the cause and effect relationships in a given variable. It also empowers the manager to deal with the situations of risk and uncertainty through the techniques such as Probability the managerial economists deals with business environments in full of risk & uncertainty and use of the Statistical techniques such as Averages, Measures of Dispersion , Regression, Time series, Probability and so on.
* **Managerial Economics-Accountancy**: the accountant provides accounting information relating to casts, revenues, receivables, payables, Profit/loss etc and this form the basis for the managerial economist. The main objectives of accounting functions are to read, classify and interpret the given accounting data. The managerial economist depends up on accounting data fro decision making and forward planning.
* **Managerial Economics-Organizational Behavior**: It enables the managerial economists to study and develop behavioral models of the firm integrating the manager’s behavior with that of the owner.
* **Managerial Economics-Psychology**: Consumer Psychology is the basis on which Managerial economist’s acts up on. It contributes towards understanding the behavioral implications, attitudes & motivations of the micro economic variables such as consumer, investor, worker

**DEMAND ANALYSIS**

In ordinary sense demand means desire. Suppose a person desires to have a car it is called Demand. But in Economic sense the concept of demand has a separate meaning which is quite different from the Above Meaning.

**Definition**:

* According to Alfred marshal” an rise in the price of commodity (or) service is followed by a reduction in demand and fall in the price is followed by an increasing demand”.
* According to Professor Samulson “The law of demand may be stated as other things being equal. The Quantity of demand increases with a fall in price and Demand decreases with a rise in price”.

**TYPES OF DEMAND**

Demand always implies at a given price. The quantity demanded at a given level of price is the volume of demand. The use and characteristics of different products affect their demand. In other words a product with more number of uses is naturally more in demand than one with a single use. Certain important demand distinctions:

* Individual demand
* Market demand
* Company demand
* Industry demand
* Autonomous demand
* Derived demand
* Demand perishable goods and Durable goods
* Short-term demand and Long-term demand

**DETERMINANTS OF DEMAND**

* **Price of the product**: every commodity has its own consumers. Its place falls new consumers start consuming that commodity. As a result the demand for that commodity, many consumers will stop its consumption, and demand will be reduced. It is due to price effect.
* **Income of the consumer**: Generally the change in the price is leads to change in the real income of the consumer. The fall in the price of a commodity is indirectly indicates the increase in the real income of consumers. So when the income increases the consumer can purchase more units of the commodity.
* **Prices of substitutes**: According to this effect the change in the price of one commodity is leads to change in the demand for another commodity. In the case of substitute goods, when the price of commodity falls it will become relatively cheaper than its other substitute commodity.
* **Prices of complementary goods**:
* **Taste, Preferences of the consumers**:
* **Expectation about the future prices**:
* **Advertising effect**:
* **Other factors**:

**Demand function**

The functional relationship between the demand for a commodity and its various determinants is called demand function. The following is the equation of demand function.

QDX= f (P, I, PS, PC, A, EP O) Where

P= Price of the product

I= Income of the Consumer

PS **= Prices of substitutes**

PC **= Prices of complementary goods**

A= Advertisement effect

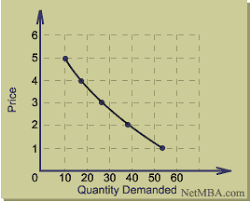
Ep = Expectation about the future prices

**LAW OF DEMAND**

Law of demand states that other things are constant price increase demand decrease, price decrease demand increase.

|  |  |
| --- | --- |
| **Price** | **Demand** |
| 6 | 10 |
| 5 | 20 |
| 4 | 30 |
| 3 | 40 |
| 2 | 50 |
| 1 | 60 |

**Demand curve:** graphical representation of price and demand relationship is known as demand curve.



# Reasons curve slope downwards from left to right

* Existing consumers buy more quantity
* New consumers
* Income effect
* Substitution effect

**Exceptions/Limitations to the Law of Demand**

In the case of some commodity demand curve goes “Upwards from left to Right”. It says the price rises (increases) demand also increases, and vice versa. Some of the exceptions regarding the law of demand are as follows:

* **Geffen Goods**: In the early part of the 19th Century Sir. Robert Giffen a British economist. In this case of purchase in bread, when its price increased then its quantity also increases. In other words in the case of certain inferior goods, when the price falls demand also falls, this is against the law of demand. This process is called as “Paradox”, it was started by Geffen, and so we called it as a Geffen paradox.
* **Basic necessities:** In case of basic necessities of life such as salt, rice, medicine, etc. the law of demand is not applicable as the demand for such necessary goods does not change with the rise or fall in price.
* **Expectations of change in future price:** When people feel that a commodity is going to be scarce in the near future, they buy more of it even if there is a current rise in price.For example: If the people feel that there will be shortage of L.P.G. gas in the near future, they will buy more of it, even if the price is high.
* **Goods having prestige value**: Few goods like diamond can be purchased only by rich people. The prices of these goods are so high that they are beyond the capacity of common people. The higher the price of the diamond the higher the prestige value of it. In this case, a consumer will buy less of the diamonds at a low price because with the fall in price, its prestige value goes down. On the other hand, when price of diamonds increase, the prestige value goes up and therefore, the quantity demanded of it will increase.
* **Special branded commodities**:

**ELASTICITY OF DEMAND**

The term “Elasticity” is defined as the rate of responsiveness in the demand of a commodity for a given change in price. (or) any other determinants of a given change in price.

The adjective form, "elastic," means something is highly responsive to changes in something else. Elastic demand means that the quantity demanded changes a lot when the price changes. Inelastic demand means that the quantity demanded does not change much when the price changes.

**Types of Elasticity:**

Price Elasticity of Demand

Income Elasticity of Demand

Cross Elasticity of Demand

Advertising Elasticity of demand

* **Price Elasticity of Demand:** The law of demand states that demand will change when there is a change in the price. But it does not explain the rate of change in the demand for a given change in the price. The rate of change in demand will not be same for all commodities. To explain the relationship between the rate of change in the price and the rate of change in demand, elasticity of demand is used.

Elasticity of Demand= Proportionate change in quantity of Demand

Proportionate change in Price

Symbolically: **(Q2-Q1)/Q1**

**(P2-P1)/P1**

**Q1 =** Quantity of Demand before Change

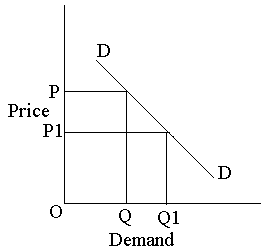
**Q2 =** Quantity of Demand after Change

**P1 =** Price before Change

**P2 =** Price after Change

The Relationship between the proportionate change in the demand and the proportionate change in the price is called Elasticity of demand.

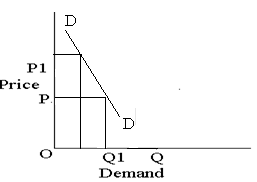
**Kinds of price elasticity of demand**: By compare the proportionate change in demand and the proportionate change in price, the concept of elasticity of demand was classified in to five types.

* **Relatively price Elasticity of Demand**: If the percentage change in demand is “more than” the percentage change in the price. The numerical value is greater than 1 (Ed>1). This can be explain with the following diagram:

In this diagram price indicates on Y-axis, demand indicates on X-axis. The price Decreases from OP to OP1 the demand Increases from OQ to OQ1.PP1 is the change in price, QQ1 is the change in the demand. So the change in the demand is greater than change in the price. Eg: Petro, Gas etc.

* **Relatively price In Elasticity of Demand**: If the percentage change in the demand is “less than” the percentage change in price. The numerical value is less than 1 (Ed<1).

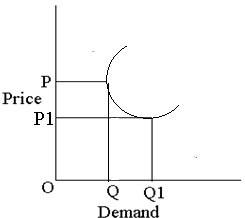
Eg: Sugar.



In the diagram price of the commodity Increases from OP to OP1 as a result of which, demand Decreases from OQ to OQ1 only.

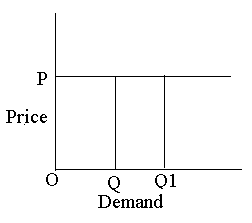
* **Unitary price Elasticity of Demand**: The percentage change in demand is exactly the same as the change in price, then the elasticity of demanded is said to be unitary. The numerical value of unitary elasticity of demand is Equal to1 (Ed=1).

Eg: Cloth.



Demand curve takes the shape of rectangular Hyperbola. Here area under the demand curve will always be equal.

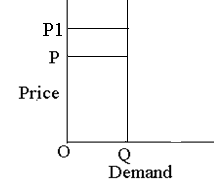
* **Perfectly price Elasticity of the Demand**: Demand for a commodity is said to be perfectly elastic. When the demand may increase or decrease to any extent, but there is no change in price then it is called as Perfectly Elasticity of demand. Symbolically it can be say that Ed=



In this diagram price indicates on Y-axis, demand indicates on X-axis. The price is OP mean while the demand increases from OQ to OQ1

The demand curve becomes parallel to X-axis.

* **Perfectly price In Elasticity of Demand:** The change in price does not affect the demand of certain commodities. The demand for these commodities remains almost constant. Symbolically it can be say that Ed= Eg: Salt.



In this diagram price indicates on Y-axis, demand indicates on X-axis. The price is increased from OP to OP1.  But the demand curve remains same i.e. OQ .Demand curve becomes parallel to the Y-axis.

* **Income Elasticity of Demand**: The income elasticity of demand is defined as a ratio percentage (or) proportional change in the quantity of demand to the percentage change in income. According to the formula

Income Elasticity of Demand = Proportionate change in quantity of Demand

Proportionate change in Income

Symbolically: **(Q2-Q1)/Q1**

**(I2-I1)/I1**

**Q1 =** Quantity of Demand before Change

**Q2 =** Quantity of Demand after Change

**I1 =** Income before Change

**I2 =** Income after Change

**Significance of Income Elasticity**: in determining the effects of changes in business activity it is necessary for the trader to be aware of the income elasticity of demand for a given commodity. It can estimates the likely changes in the demand for his product as a result of changes in national income.

Income elasticity will help us in knowing whether a commodity is a superior good, normal good, Inferior good. If the income elasticity is positive ≥ 1 it is a Superior good. Eg: Automobiles, Refrigerators. If the income elasticity is positive ≤ 1 it is known to be normal good. If the income elasticity is negative, it is inferior good.

* **Cross Elasticity of Demand**: It refers to the quantity demanded of a commodity in response due to a change in the price of a related good, which may be substitute. Eg: Tea & Coffee, Pen & Ink etc. are complementary goods.

Cross Elasticity of Demand= Proportionate change in quantity of Demand of Product X

Proportionate change in Price of Product Y

Symbolically: **(Q2-Q1)/Q1**

**(P2Y-P1Y)/P1Y**

**Q1 =** Quantity of Demand before Change

**Q2 =** Quantity of Demand after Change

**P1Y =** Price before Change

**P2Y =** Price after Change

* **Advertising Elasticity of Demand**: It refers to increase in the sales revenue because of changes in the advertising expenditure. In other words there is a direct relationship between the amount of money spent on advertising and its impact on sales. Advertising elasticity is always positive.

Advertising Elasticity of Demand = Proportionate change in quantity of Demand for Product X

Proportionate change in Advertising costs

Symbolically: **(Q2-Q1)/Q1**

**(A2-A1)/A1**

**Q1 =** Quantity of Demand before Change

**Q2 =** Quantity of Demand after Change

**A1 =** Advertising cost before Change

**A2 =** Advertising cost after Change

**Tabulation form for Different types of Elasticity’s of Demand**

|  |  |  |
| --- | --- | --- |
| 1. **Ed > 1** 2. **Ed <1** 3. **Ed = 1** 4. **Ed =∞** 5. **Ed = 0** | **Elasticity**  **In Elasticity**  **Unit Elasticity**  **Perfectly Elasticity**  **Perfectly In Elasticity** | Proportionate change in the demand is **More than** Proportionate change in the Price Eg: Petrol  The changes in demand is **Less than** changes in the price Eg: Sugar  Changes in Demand is **Equal** to changes in price  Eg: Cloth  Increase or Decrease in demand to any extent without changes in the price Eg: Imaginary goods  Increase or Decrease in price to any extent without changes in the Demand Eg: Salt |

**Factors Governing Elasticity of Demand**:

Elasticity is governed by number of factors change in any one these factors is likely to affect the elasticity of demand. The factors are:

* **Time frame**: The more time available for a customer, the more elastic of Demand for a particular Product & vice-versa.

Eg: In the case of **Vegetables** when you don’t have any time, you go to nearby shop and buy whatever you want with any price. But if you had free time, you would have preferred to get the same from vegetables market at lesser price

* **Possibility of Postponement:** A product had an elastic demand where its consumption can be postponed.

**Eg:** If the price of “**TV**” sets goes up, there may be a fall in demand for them because they are not absolutely necessary for life. But if the price of “**Salt**” goes up we cannot postpone its use.

* **Nature of the Commodity:** Demand for necessaries is generally in elastic in nature, where as demand for comforts and luxuries are generally, more Elastic.

**Eg:** Necessaries - Rice, Sugar, Wheat, Salt etc

Luxuries - TV, Fan, Car etc.

* **Taste &Preference of the consumer**: If the customer is particular about his taste and preference, the product is said to be in elastic. Some customers prefer certain brand such as Colgate, Tooth paste, Tata tea etc, a rise in the price doesn’t matter, and they tend to buy that brand in spite of the price changes.
* **Government Policy**: The government policy is liberal, the product is likely to have an elastic demand and vice versa. The interest of the lower income group consumer, government closely monitors the prices of certain products such as ration goods sold at fair price in shop. Likewise the government can raise tax collection with reduction in the tax rates.

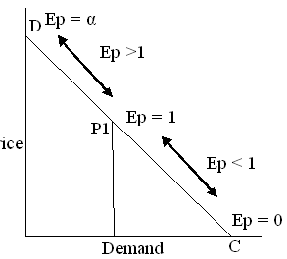
**MEASURING THE PRICE ELASTICITY OF DEMAND**

* **Point Elasticity:**

A demand curve does not have the same elasticity throughout its entire length. Elasticity differ at different points on a given demand curve. The point elasticity is defined as the proportionate change in quantity demanded resulting from a very small change in price of that commodity.

**Point EP =∆Q \* P**

**P Q**



From the above figure it can be seen that elasticity at point C. Where the demand curve meets the price axis is equal to infinity .If P1 is the midpoint of DC, Elasticity at P1 is equal “1”. At all the points between P1and C, the elasticity is greater than zero but less than unity and the points between P1and D. elasticity is greater than unity but less than infinity. At point D, elasticity is equal to ‘α’

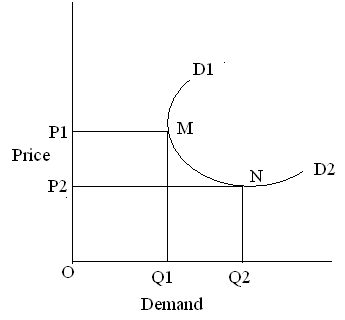
Thus the range of values of elasticity is between zero and infinity which means

0 ≥ e ≤α

The elasticity computed at a single point on the demand for a infinite changes in price is called Point Elasticity.

* **Arc Elasticity**: It measures the average responsiveness to price changes over finite points on the demand. Where MN refers to the points on the demand curve D1D2, it is not clear whether point M or N should be considered to determine elasticity.

Arc elasticity refers to the elasticity between two separate points of demand curve. The diagram is as follows.



Arc Elasticity EP **= ∆Q (P1+ P2)**

**∆P (Q1+ Q2)**

Where

P1 P2 is price before and after change

Q1 Q2 Quantities demanded before and after changes.

∆ Q and ∆P Refers to changes in the quantity demanded and change in the price.

* **Total outlay Method:**

Total outlay method is also known as total revenue method or total expenditure method. Under this method the elasticity of demand can be measured by considering in price, the subsequent changes in the total quantity of goods purchased and total expenditure.

* As a result of fall in the price, if total expenditure also decreases the demand is elastic

Eg: It means customer cannot purchase more quantity when price fall.

|  |  |  |  |
| --- | --- | --- | --- |
| Price  10  5 | Quantity of goods purchased  2    2 | Total Expenditure  20  10 | Demand Elasticity  Inelastic |

* If total expenditure remains unchanged the demand is s aid to be elastic.

Eg: as a result of price decreases the customer purchases more quantity the demand is elastic.

|  |  |  |  |
| --- | --- | --- | --- |
| Price  10  5 | Quantity of goods purchased  2    4 | Total Expenditure  20  20 | Demand Elasticity  Elastic |

* When as a result of the decreases in price of a product the total expenditure on the product remains the same the price elasticity for product is equal to one (Ed=1)

Eg: Price decreased by 100%.... Demand increases by same 100%...... total expenditure remain same……. Ed=1.

* When as a result of increases in price of a product the total expenditure on the product falls or when as a result of decreases in price the total expenditure on product increases, the elasticity of demand is greater than one (Ed≥1 )

Eg:1. Price increased by 10%.... demand decreases by more than 20%....total expenditure fall… … Ed≥1

2. Price Decreased by 10%.... demands increases by more than 20%....total expenditure rise… … Ed≥1

|  |  |  |  |
| --- | --- | --- | --- |
| price  10  11 | Quantity of goods purchased  10    8 | Total Expenditure  100  88 | Demand Elasticity  Ed ≥ 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Price  10  9 | Quantity of goods purchased  10    12 | Total Expenditure  100  108 | Demand Elasticity  Ed ≥ 1 |

* When as a result of increases in price, the total expenditure on the product rise or when as a result of decreases in price the total expenditure on product falls, the elasticity of demand is less than one (Ed≤1)

Eg:1. Price increased by 20%.... demand decreases by 10%....total expenditure rise… … (Ed≤1)

2. Price Decreased by 20%.... demands increases by 10%....total expenditure falls… … (Ed≤1)

|  |  |  |  |
| --- | --- | --- | --- |
| Price  10  12 | Quantity of goods purchased  10    9 | Total Expenditure  100  108 | Demand Elasticity  Ed ≤ 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Price  10  8 | Quantity of goods purchased  10    11 | Total Expenditure  100  88 | Demand Elasticity  Ed ≤ 1 |

**DEMAND FORECASTING**

Accurate demand forecasting is essential for a firm to enables it to produce the required quantities at the right and arrange well in advance for the various factors of production i.e Raw materials, equipments, machines, labour, buildings etc.

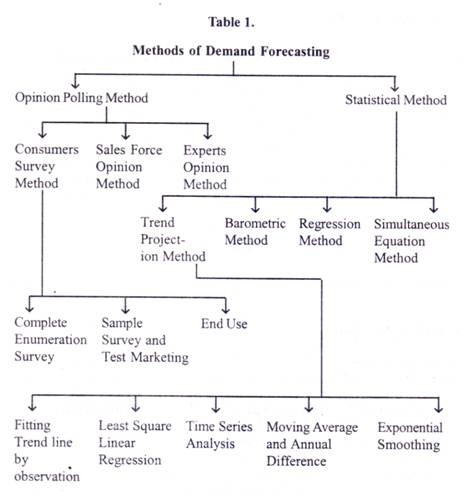
Demand forecasting is also helpful in better planning and allocations of national resources. Demand forecasting is very popular in industrially advances countries where demand conditions are always more uncertain that the supply conditions. “**The national council of applied Economic Research**” has made Demand forecasting for a number of products on a macro level.

**Steps involved in demand forecasting**:

* Identify and clearly state the objectives of forecasting. Short term, long term or market, industry as a whole etc.
* Select the appropriate methods of forecasting
* Identify the variables affecting the demand for the product
* Collecting the relevant data
* Determine the relationship between the interpretation & analysis of the data is usually done by the management.

**Methods of Demand Forecasting**

The following are the various types of methods for the demand forecasting:



1. **Survey methods**

**Survey of buyer’s opinion**

* **Census or Complete Enumeration Method**: Under this, the forecaster undertakes a complete survey of all consumers whose demand he intends to forecast, Once this information is collected, the sales forecasts are obtained by simply adding the probable demands of all consumers. The principle merit of this method is that the forecaster does not introduce any bias or value judgment of his own. He simply records the data and aggregates. But it is a very tedious and cumbersome process; it is not feasible where a large number of consumers are involved. Moreover if the data are wrongly recorded, this method will be totally useless.
* **Sample Survey Method**: Under this method, the forecaster selects a few consuming units out of the relevant population and then collects data on their probable demands for the product during the forecast period. The total demand of sample units is finally blown up to generate the total demand forecast. Compared to the former survey, this method is less tedious and less costly, and subject to less data error; but the choice of sample is very critical. If the sample is properly chosen, then it will yield dependable results; otherwise there may be sampling error. The sampling error can decrease with every increase in sample size

#### Collective Opinion or Sales Force Competitive Method: Under this method, the salesman is nearest persons to the customers and is able to judge, their minds and market. They better understand the reactions of the customers to the firm’s products and their sales trends. The estimates of the different salesmen are collected and estimates sales are predicted. These estimates are revised from time to time with changes in sales price, product, designs, publicity programmes, and expected changes in competition, purchasing power, income distribu­tion, employment and population. It makes use of collective wisdom of salesmen, departmental heads and top executives.

1. **Statistical Methods**

* **Trend Projection Method**: These are generally based on analysis of past sales patterns. These methods dispense with the need for costly market research because the necessary information is often already available in company files in terms of different time periods that is a time series data.
* **Time Series Analysis or Trend Method**: Under this method, the time series data on the under forecast are used to fit a trend line or curve either graphically or through statistical method of Least Squares. The trend line is worked out by fitting a trend equation to time series data with the aid of an estimation method. The trend equation could take either a linear or any kind of non-linear form. The trend method outlined above often yields a dependable forecast.
* **Barometric Techniques or Lead-Lag Indicators Method:** This consists in discovering a set of series of some variables which exhibit a close association in their movement over a period of time. For example, it shows the movement of agricultural income (AY series) and the sale of tractors (ST series). The movement of AY is similar to that of ST, but the movement in ST takes place after a year’s time lag compared to the movement in AY. Thus if one knows the direction of the movement in agriculture income (AY), one can predict the direction of movement of tractors’ sale (ST) for the next year. Thus agricultural income (AY) may be used as a barometer (a leading indicator) to help the short-term forecast for the sale of tractors.
* **Moving average method:** A moving average is a technique to get an overall idea of the trends in a data set; it is an [average](http://www.statisticshowto.com/average/)of any subset of numbers. The moving average is extremely useful for **forecasting long-term trends**. You can calculate it for any period of time. For example, if you have sales data for a twenty-year period, you can calculate a five-year moving average, a four-year moving average, a three-year moving average and so on.
* **Correlation and Regression**: These involve the use of econometric methods to determine the nature and degree of association between/among a set of variables. Econometrics, you may recall, is the use of economic theory, statistical analysis and mathematical functions to determine the relationship between a dependent variable (say, sales) and one or more independent variables (like price, income, advertisement etc.). The relationship may be expressed in the form of a demand function, as we have seen earlier. Such relationships, based on past data can be used for forecasting. The analysis can be carried with varying degrees of complexity. Here we shall not get into the methods of finding out ‘correlation coefficient’ or ‘regression equation’; you must have covered those statistical techniques as a part of quantitative methods. Similarly, we shall not go into the question of economic theory. We shall concentrate simply on the use of these econometric techniques in forecasting.
* **Judgmental Approach**: |Management may have to use its own judgment when analysis of time series and trend projections is not feasible. Because of wide fluctuations in sale or because of anticipated charges in trends. Uses of regression method are not possible because of lack of historical data or because of management in ability to predict even identify casual factors.
* **Test Marketing** is often employed after new product development but prior to a full-scale national launch of a new brand or product. The idea is to choose a relatively small, reasonably isolated, yet somehow demographically “typical” market area. The total marketing plan for the item, including advertising, promotions, and distribution tactics, is “rolled out” and implemented in the test market, and measurements of product awareness, market penetration, and market share are made. While these data are used to estimate potential sales to a larger national market, the emphasis here is usually on “fine-tuning” the total marketing plan and insuring that no problems or potential embarrassments have been overlooked. For example, Proctor and Gamble extensively test-marketed its Pringles potato chip product made with the fat substitute Olestra to assure that the product would be broadly acceptable to the market.

#### Expert’s Opinion method: Under this method expert’s opinions are sought from specialists in the field, outside the organizations or the organization collects opinions from such specialists; views of expert’s published in the newspaper and journals for the trade, wholesalers and distributors for the company’s products, agencies and professional experts. These opinions and views are analyzed and deductions are made there from to arrive at the figure of demand forecasts.

**FORECASTING DEMAND FOR NEW PRODUCT**

Joel dean has suggested a number of possible approaches to the demand forecasting for new products.

* Project the demand for the new product rather existing old products.
* Analyses the new products as substitute for some existing product or service.
* Estimate the rate of growth and the ultimate level of demand for the new product.
* Estimate the demand by making direct enquires in the form of samples.
* Offer the new products for sale in a sample market by direct mail or through one multiple shops.
* Collect the various alternatives from consumers.
* Make a desired plan for implementing or producing more outputs in the markets.

**CRITERIA OF A GOOD FORECASTING METHOD**

The following are the various criteria of a good forecasting

* **Accuracy:** it is necessary to check the accuracy of past forecasts against present performance and of present forecasts against future performance.

The accuracy of the forecasts is measured by degree of deviations between forecasts and actual, the extent of success in forecasting directional changes.

* **Simplicity and ease of comprehension**: Management must be able to understand and have confidence, accuracy used in the various techniques. Understanding is also needed for a proper interpretation of the results.
* **Economy**: costs must be weighed against the importance of the forecasts to the operations of the business. The decision for required money and managerial efforts should be allocated to obtain a high level of forecasting accuracy.
* **Availability**: The techniques employed should be able to produce meaningful results quickly techniques which take a long time to work out may produce useful information for effective management decisions.