

Introduction to statistics:

Meaning of Statistics: Numerical statements of facts is called statistics or statistical data ^{only} when they are i) aggregative ii) they are affected by multiplicity of factors iii) they are estimated as per reasonable standard of accuracy. iv) they are collected in a systematic manner for a pre-determined purpose and v) they are placed in relation to each other.

Definition of Statistics (in singular sense):

"Statistics is a science of collection, presentation, analysis and interpretation of numerical data"
- Croxton and Cowden

Functions of Statistics:

- i) To present facts in proper form.
- ii) To simplify raw data.
- iii) To facilitate comparison.
- iv) To help formulating policies.
- v) To study relationship between different phenomena.
- vi) To forecast future values.
- vii) To measure uncertainties.
- viii) To test hypothesis and
- ix) To draw valid inferences.

Scope/Importance of Statistics: (2)
In ancient times statistics was associated only with the administrative and political aspects of a state. In modern age statistics finds its application in almost every sphere of human activity.

1) Statistics in economics: Statistical analysis is indispensable in economics. Statistical analysis is widely used in various problems of production, consumption, distribution etc. Statistical methods are very useful in formulating various economic policies. eg. vital statistics are useful in formulating family planning programme, government utilises consumer price index number for granting D.A. to the government employees. Different statistical measures like correlation and regression are used for decisions making. Time series and regression analysis may be used for forecasting. Different statistical test like Z-test, t-test, χ^2 (chisquare) test are widely used for testing various economic hypothesis.

2) Statistics in industry, Business and Commerce: Statistics is gaining importance day by day in industry, business and commerce. In all these spheres, the problem of decision making under the condition of uncertainty is a common problem.

(3)
In order to succeed in any commercial activity (business), one must study all the factors which relates production, buying and selling, exporting and importing of goods in which they deal. Eg a business man must study or ~~to~~ determine the demand for his product and consequently have to determine the volume of supply of his product by taking into consideration the impact of inflation on the demand for his product; In this case one has to take the help of various statistical techniques.

Further, whether a particular industry is to be set up or not, a new trade is to be established or not, such decisions can be taken only on the basis of quantitative analysis various aspects related to such problems.

Limitations of Statistics: Some remarkable limitations of Statistics are —

- i) It deals only with quantitative characteristics.
- ii) It does not deal with single object.
- iii) Statistical method may not provide the best solution. It is true on the average only.
- iv) Statistics can be misused.