

- Introduction To Statistics -

The word statistics has different meaning to different persons. Knowledge of statistics is applicable in day-to-day life in different ways. In daily life it means general calculation of items, in railway statistics means the number of trains operating, number of passengers, freight etc. and so on. Thus statistics is used by people to take decision about the problems on the basis of different type of - quantitative and qualitative information available to them.

However, in behavioural sciences, the word 'statistics' means something different from the common concern of it. Prime function of statistic is to draw statistical inference about population on the basis of available quantitative information. Overall, statistical methods deal with reduction of data to convenient descriptive terms and drawing some inferences from them.

Meaning of Statistics :-

The word statistics has been derived from Latin word 'status' or Italian 'Statista' meaning statesman. Professor Gott Fried Achenwall used it in the 18th century. During early periods these words were used for political state of the region. The word 'Statista' was used to keep the records of census or data related to wealth of a state. Gradually, its meaning and use extended and thereonwards its nature changed.

The word statistics is used to convey different meanings in singular and plural sense. Therefore it can be defined in two different ways.

Statistics in Singular Sense -

In singular sense, 'statistics' refers to what is called statistical methods. It deals with the collection of data, their classification, analysis and interpretation of statistical data. Therefore, it is described as a branch of science which deals with classification, tabulation and analysis of numerical facts and make decision as well. Every statistical inquiry should pass through these stages.

Statistics in Plural Sense -

'Statistics' used in plural sense means that quantitative information is available called 'data'.

According to Webster's "statistics are the classified facts representing the conditions of the people in a state specifically those facts which can be stated in number or in tables of number or classified arrangement".

Horace Secrist describes statistics in plural sense as follows: "By statistics we mean aggregates of facts affected to a marked extent by multiplicity of causes - numerically expressed, enumerated or estimated according to reasonable standard of accuracy, collected in a systematic manner for a pre-determined purpose and placed in-

relation to each other." Thus Secrist's definition highlight following features of statistics:

- i) Statistics are aggregate of facts: Single or unrelated items are not considered as statistics.
- ii) Statistics are affected by multiplicity of causes: In statistics the collected information are greatly influenced by a number of factors and forces working together.
- iii) Statistics are numerical facts: - Only numerical data constitute statistics.
- iv) Statistics are enumerated facts or estimated with a reasonable standard of accuracy: -
 while enumerating or estimating data, a reasonable degree of accuracy must be achieved.
- v) Statistics are collected in a systematic manner: -
 Data should be collected by proper planning by utilising tools developed by trained personnel.
- vi) Statistics are collected for a predetermined purpose: -
 It is necessary to define the objective of enquiry before collecting the statistics. The objective of enquiry must be specific and well defined.
- vii) Statistics should be comparable: -

Only comparable data will have some meaning. For statistical analysis, the data should be comparable with respect to time, place, group, etc.

Definition of Statistics :-

A.L Bowley gave several definitions of statistics

- i) Statistics may be called the science of counting. This definition emphasises enumeration aspect only.
- ii) In another definition he describes it as "Statistics may rightly be called the science of average".
- iii) At another place Statistics is defined as, "Statistics is the science of measurement of social organism regarded as a whole in all manifestations".

All three definitions given by Bowley seem to be inadequate because these do not include all aspects of statistics.

According to Seligman "Statistics is the science which deals with the methods of collecting, classifying, presenting, comparing and interpreting numerical data collected to throw some light on any sphere of enquiry."

Croxtan and Cowden defined "Statistics as the collection, presentation, analysis, and interpretation of numerical data"

Among all the definitions, 'the one given by Croxton and Cowden is considered to be most appropriate as it covers all aspects and field of statistics.

These aspects are given below -

Collection of Data - Once the nature of study is decided, it becomes essential to collect information in form of data about the issues of the study. Therefore, the collection of data is the first step.

Classification and Presentation -

Once data are collected, researcher has to arrange them in a format from which they would be able to draw some conclusions. The arrangement of data in groups according to some similarities is known as classification.

Tabulation - is the process of presenting the classified data in the form of table.

Analysis of Data - It is the most important step in any statistical enquiry. Statistical analysis is carried out the process the observed data and transform it in such a manner as to make it suitable for decision making.

Interpretation of Data -

After analysis the data, researcher gets information partly or wholly about the population. Explanation of such information is more useful in real life.