BBA II Semester

Subject- BUSINESS STATISTICS

TOPIC- Statistics- Introduction And Purpose

BY-   Richa Srivastava (HOD)

**Department of Business Administration
KAPG college,
Prayagraj.**

Business Statistics

STATISTICS

The word "Statistics" of English language has either been derived from the Latin word status or Italian word statistics and meaning of this term is "An organised political state.

Meaning: The science of collecting, analysing and interpreting such data or Numerical data relating to

an aggregate of individuals.

E.g:- Statistics of National Income, Statistics of Automobile Accidents, Production Statistics, etc.

Definition: - "The classified facts relating the condition of the people in a state specially those facts which can be stated in members or in tables of members or in any tabular or classified arrangements."

-Webster

"Statistics may be regarded as (i) the study of population (ii) The study of variation (iii) The study of

method of reduction of data"

-R.A. Fisher.

Nature /Features /Characteristics of statistics

- It is an aggregate of facts.
- Analysis of multiplicity of causes.

- It is numerically expressed.
- It is estimated according to reasonable standard of accuracy.

- It is collected for pre-determined purpose.
- It is collected in a systematic manner.

Division of Statistics

Theoretical   Statistical Methods   Applied

Theoretical: Mathematical theory which is the basis of the science of statistics is called theoretical statistics.

Statistical Methods: By this method we mean methods specially adapted to the elucidation of quantitative data affected by a multiplicity of causes.

Few Methods are:-

(1)   Collection of Data (2) Classification (3) Tabulation (4) Presentation (5) Analysis (6) Interpretation (7) Forecasting.

Applied: - It deals with the application of rules and principles developed for specific problem in different disciplines.

Eg: - Time series, Sampling, Statistical Quality control, design of experiments.

Functions of Statistics:-

- It presents facts in a definite form.
- It simplifies mass of figures

- It facilitates comparison
- It helps in prediction

- It helps in formulating suitable & policies.

Scope of Statistics:-

1. Statistics and state or govt.

2. Statistics and business or management.

- Marketing

- Production

- Finance

- Banking

- Control

- Research and Development

- Purchases

2. Statistics and Economics
- Measures National Income

- Money Market analysis
- Analysis of competition, monopoly, oligopoly,

- Analysis of Population etc.

3. Statistics and science

4. Statistics and Research

Limitations:-

(i)   It is not deal with items but deals with aggregates.
(ii) Only on expert can use it
(iii) It is not the only method to analyze the problem.
(iv) It can be misused etc.

Statistical Investigation

Meaning: In general it means as a statistical survey.

In brief. Scientific and systematic collection of data and their analysis with the help of various statistical method and their interpretation.

Stages of Statistical Investigation:-

- Planning of Investigation
- Collection of Data
- Editing of Data
- Presentation of Data

(a) Classification

(b) Tabulation
(c) Diagrams
(d) Graphs

Analysis of Data
Interrelation of Data or Report Preparation

Types of Statistical Investigation:-

1. Experiment or survey investigation
2. Complete or sample investigation
3. Official, semi-official, Non official investigation
4. Confidential or open investigation
5. General purpose and specific purpose investigation
6. Original or repetitive investigation.

PROCESS OF DATA COLLECTION

Data: - A bundle of Information or bunch of information.

Data Collection: Collecting Information for some relevant purpose & placed in relation to each other.

Types of Data:-

1. **Raw Data:-** When we collect data through schedules and questionnaires or some other method eg:- Classification, tabulation etc.
2. **Processed Data:-** When we use the above raw data for application of different methods of analysing of data. Like using correlation, Z-test, T-test on data. That will be known as processed data.
3. **Internal Data: -** When data is collected by problem the internal source for any specific

It purpose.

4. **External Data: -** This type of data collected by the external source.
5. **Primary Data: -** It is original and collected first time. it is like raw material and it is required large sum of money, energy and time.

6. **Secondary Data: -** Secondary data are those already in existence and which have been collected for some other purpose than answering of the question at hand.

7. **Qualitative Data: -** Which can not be measurable but only there presence and absence in a group of individual can be noted are called qualitative data.

8. **Quantitative Data: -** The characteristics which can be measured directly are known as quantitative data.

Collection of Data: - It means the methods that are to be employed for obtaining the required information from the units under investigations.

Methods of Data Collection:- (Primary Data)

- Direct Personal Interviews
- By observation
- By Survey

- By questionnaires

Difference between Primary and secondary data:-

Points	Primary Data	Secondary Data
1. **Originality**	Primary data are original i.e., collected first time.	Secondary data are not original, i.e.., they are already in existence and are used by the investigator.
2. **Organisation**	Primary data are like raw material.	Secondary data are in the from of finished product. They have passed through statistical methods.
3. **Purpose**	Primary data are according to the object of investigation and are used without correction.	Secondary data are collected for some other purpose and are corrected before use.
4. **Expenditure**	The collection of primary data require large sum, energy and time.	Secondary data are easily available from secondary sources (published or unpublished).
5. **Precautions**	Precautions are not necessary in the use of primary data.	Precautions are necessary in the use of secondary data.

Preparation of Questionnaires:-

This method of data collection is quit popular, particularly in case of big enquires, it is adopted by individuals, research workers. Private and public organization and even by government also.

A questionnaires consists of number of question printed or type in a definite order on a form or set of forms. The respondents have to answer the question on their own.

Importance:-

  i.   Low cost and universal
 ii.   Free from biases.
iii.   Respondents have adequate time to respond
 iv.   Fairly approachable

Demerits:-

(i) Low rate of return
(ii) Fill on educated respondents

(iii) Slowest method of Response

Preparation of Questionnaires: - It is considered as the heart of a survey operation. Hence it should be very carefully constructed. If it is not properly set up and carefully constructed.

Step I   :- Prepare it in a general form.

Step II   :- Prepare sequence of question.

Step III   :- Emphasize on question formulation and wordings

Step IV   :- Ask Logical and not misleading questions.

Step V   :- Personal questions should be left to the end.

Step VI   :- Technical terms and vague expressions should be availed classification and

        Tabulation of Data

Classification & Tabulation of Data

After collecting and editing of data an important step towards processing that classification. It is grouping of related facts into different classes.

Types of classification:-

i. **Geographical:-** On the basis of location difference between the various items. E.g. Sugar Cave, wheat, rice, for various states.

ii. **Chronological:-** On the basis of time e.g.-

Year	Sales
1997	1,84,408
1998	1,84,400
1999	1,05,000

iii. **Qualitative classification: -** Data classified on the basis of some attribute or quality such as, colour of hair, literacy, religion etc.

Population

iv. **Quantitative Classification: -** When data is quantify on some units like height, weight, income, sales etc.

Tabulation of Data

A table is a systematic arrangement of statistical data in columns and Rows.

Part of Table:-

1. Table number
2. Title of the Table
3. Caption
4. Stub
5. Body of the table
6. Head note
7. Foot Note

Types of Table:-

(i) Simple and Complex Table:-

(a) Simple or one-way table:-

Age	No. of Employees
25	10
30	7
35	12
40	9
45	6

(b) Two way Table

Age	Males	Females	Total
25	25	15	40
30	20	25	45
35	24	20	44
40	18	10	28
45	10	8	18
Total	**97**	**78**	**175**

2) General Purpose and Specific Purpose Table:- General purpose table, also known as the reference table or repository tables, which provides information for general use or reference.
Special purpose are also known as summary or analytical tables which provides information for one particular discussion or specific purpose.

METHODS OF SAMPLING

Meaning: - The process of obtaining a sample and its subsequent analysis and interpretation is known

as sampling and the process of obtaining the sample if the first stage of sampling.

The various methods of sampling can broadly be divided into:

   i.   Random sampling method
   ii. Non Random sampling method

Random Sampling Method

I Simple Random Sampling: - In this method each and every item of the population is given an equal chance of being included in the sample.

(a) Lottery Method (b) Table of Random Numbers
Merits:

Equal opportunity to each item.

Better way of judgment

Easy analysis and accuracy

Limitations:

Different in investigation

Expensive and time consuming

For filed survey it is not good

II Stratified Sampling:- In this it is important to divided the population into homogeneous group called strata. Then a sample may be taken from each group by simple random method.

Merit:- More representative sample is
used. Grater accuracy

Geographically Concentrated

Limitations: Utmost care must be exercised due to homogeneous group deviation. In the absence of skilled supervisor sample selection will be difficult.

III Systematic Sampling:- This method is popularly used in those cases where a complete list of the population from which sampling is to be drawn is available. The method is to be select k th item from the list where k refers to the sampling interval.
Merits: - It can be more convenient.

Limitation: - Can be Baised.

IV Multi- Stage Sampling: - This method refers to a sampling procedure which is carried out in several

stages.

Merit: - It gives flexibility in Sampling

Limitation: - It is difficult and less accurate

Non Random Sampling Method:-

I. **Judgment Sampling: -** The choice of sample items depends exclusively on the judgment of the investigator or the investigator exercises his judgement in the choice of sample items. This is an simple method of sampling.

II. **Quota Sampling: -** Quotas are set up according to given criteria, but, within the quotas the selection of sample items depends on personal judgment.

III. **Convenience Sampling: -** It is also known as chunk. A chunk is a fraction of one population taken for investigation because of its convenient availability. That is why a chunk is selected neither by probability nor by judgment but by convenience.

Size of Sample:- It depends upon the following things:-

Cost aspects. The degree of accuracy desired. Time, etc. Normally it is 5% or 10% of the total population.

Limitation of overall sampling Method:-

Some time result may be inaccurate and misleading due to wrong sampling.

Its always needs superiors and experts to analyze the sample.

It may not give information about the overall defects. In production or any study.

It Becomes Biased due to following reason:-

(a) Faulty process of selection
(b) Faulty work during the collection of information

(c) Faulty methods of analysis etc.