

MARUDHAR KESARI JAIN COLLEGE FOR WOMEN, VANIYAMBADI
PG & RESEARCH DEPARTMENT OF MATHEMATICS

CLASS : I – B.A. ECONOMICS

SUBJECT CODE : 23UEC12

SUBJECT NAME : STATISTICS FOR ECONOMICS –I

SYLLABUS

UNIT- I

Introduction and Collection of Data

Introduction – Nature and Scope of Statistics – Uses and Limitations of Statistics – Data Collection – Primary and Secondary Data –Tools for collecting Primary Data – Requisites of Good Questionnaire – Sources of Secondary Data.

Statistics :

Statistics is the science of collection, Organisation, presentation, analysis and interpretation of numerical data.

Statistics are numerical statement of facts in any department of enquiry placed in relation to each other.

characteristic of Statistics::

- * Aggregate of facts or data.
- * Numerically expressed.
- * Affected by different factors.
- * Collected or estimated.
- * Reasonable standard of accuracy.
- * Predetermined purpose.
- * comparable.
- * Systematic collection.

Data :

Data refers to any group of measurement that happen to interest us. Thus decision measurement provide information the maker uses.

Data are the foundation of any statistical investigation and the job of collecting data is the same for a statistician as collecting stone, cement, mortar etc.... is for a builder.

(7626) Scope of Statistics:

The scope of statistics is much extensive. It can be divided into two parts.

i) Statistical method.

* Such as a collection, classification tabulation, presentation, analysis, interpretation and forecasting.

* "Statistic may rightly be called the science of averages."

It is no doubt that average are widely used to summarise the collected data the average is not the only one device. The other devices like diagram, graph, correlation, coefficient, etc....

ii) Applied Statistics

It is further divided into three parts.

* Descriptive applied Statistics

The purpose of this analysis is to provide descriptive information.

* Scientific applied Statistics

Data are collected with the purpose of some scientific research and with the help of these data some particular theory or principle is propounded.

* Business applied Statistics

Under this branch statistical are used for the study, analysis and solution of various problems in the field of business.

⇒ When object of survey is over.

⇒ The scope of survey of the enquiry should be decided with a reference to the space to the enquiry is clearly determined the process become

Smooth and enable to the collection
only the required data.

⇒ If scope is not determined, ^{mind} might
collected and might be neglected.

Statistical Methods:

- * Classification and tabulation of
Raw data for the purpose of easy
interpretation and analysis.

- * Various measures of Average for
Simplifying and condensing the
numerical data.

- * The various measures of dispersion
to study the spreading of observation
and deviation from an average.

- * The coefficient of dispersion for
comparing two sets of numerical
data.

* The coefficient of correlation to study the degree of relationship between two variables.

* The regression analysis gives the relationship between the variables. Which is also used for prediction of the variable of one variable, when the other is unknown.

* Various measure time series for forecasting and for study seasonal trend.

* Index numbers of price, quantity, cost of living, which are used in business and commercial economics.

* Statistical quality control is a measure to decide whether a production causes is under control or not.

* Hypothesis testing for example is used for testing the significant of the difference between the population

parameter and sample statistics.

Limitations of Statistics:

i) Statistics can be used only to study numerical ^{value} data like honesty, intelligence, poverty etc... are not capable for statistical analysis.

ii) The Statistics deals only with aggregate and not with individual, individual item Separatively play not no important in Statistics.

iii) Statistical data are used only in an average.

iv) Statistical data collect for a given purpose cannot be applied in any situation, it is not always possible to compare statistical data unless they are harmonious in character.

vi) Statistics does not deal with individual item:

- * Individual taken separately play no importance in statistics. The collection of data contribute statistics.

vii) Statistics deals with quantitative data only:

- * Statistics is numerical of facts, Statistics deals with only the quantitative data.

- * Ex: per capital income, population growth etc... but quantitative aspects such as honesty, intelligence, poverty efficiency, blindness cannot be studied directly.

viii) Statistics may mislead to wrong calculation in the absence of details:

- * If the figure given without details. we may arrive at wrong and misleading conclusion.

ix) Statistical loss are true only on averages.

* Loss of physical Sciences are perfect. But Statistical loss are not so perfect as the loss of physics or chemistry.

* The Statistical results are true only on the average.

x) Statistics does not ^{tell} reveal the entire story :

* The Statistics simplifies complicated data. Before using the data the background of the data may be studied.

xi) Statistical data should be uniform and homogeneous :

Comparison is one of the important characters of Statistical data. Uniform and homogeneous data can be compared. Unequal or uncomparable data will be wrong and misleading results

xii) Statistic is liable to the misused :

It is the most important

Limitation of Statistics.

Collection of Data : (2m)

1) Collection of Data is the process of enumeration together with the proper recording of results. The success of an enquiry is based upon the proper collection of data.

2) The basic problem of Statistical enquiry is to collect facts and figure relating to a particular phenomenon under study. Whether the enquiry is in business, Economics or Social Science.

The investigator is the person who conducts the Statistical enquiry. He is a trained and efficient statistician.

Primary data :

The investigator may choose any one of the following methods.

1) Direct personal Observation :

The data is collected by the

investigator personally for instant, If one wants to study the living conditions of the people in a village, He has to go to the village contact the people and get the needed information.

Merits ::

- 1) Original data are collected.
- 2) True and read reliable data can be had
- 3) The response will be more encouraging because of personal approach.
- 4) Uniformly and homogeneity can be maintain.
- 5) A high degree of accuracy can be aimed.

Demerits ::

- 1) It is unsuitable where the area is large.
- 2) It is expensive and time consuming the chance being basis are more.

3) The chances of being buyers are more.

4) An untrained investigator will not bring good results.

5) One has to collect information according to the convenience of the information.

ii) Indirect oral interview :

- * When the informant is reluctant to supply information, the method of indirect oral investigation can be followed.

- * Under this method the investigator approaches the witnesses or third parties, who are in touch with informant.

- * The enumerator interviews the people, who are directly or indirectly connected with the problem under study.

- * For instance, we are asked to collect information related to the gambling or drinking habits of people.

* In such cases, the informants will be reluctant to supply information relating to their own socially evil habits.

* On such occasions, we may approach the dealers of liquor shops, friends, neighbours etc... to get the needed information.

* Generally this method is employed by different enquiry committees and commission.

* The police department generally adopt this method to get clues, thefts, murders, etc...

* The police interrogate third parties who possess knowledge about the happenings and the studies.

Merits :

- 1) It is simple and convenient.
- 2) It saves time, money and labour.
- 3) It can be used in the investigation of the large area.

A) The information is unbiased.

Demerits :

1) Interview with an improper man will spoil the results.

2) In order to get the real position, a sufficient number of persons are to be interviewed.

3) The careless attitude of the informant will affect the degree of accuracy.

4) The witnesses may colour information to their interest.

iii) Information ^{through} agency :

* Under this method, local agents or correspondence will be appointed.

They collect the information and transmit it to the office or person.

* They do this according to their own ways and tastes. This system is adopted by newspapers, agencies, periodicals, etc...

* When information is needed in different fields.

* ex: Accidents, Share markets, Sports, ^{strikes} qualities, etc... the informants are generally called correspondence.

Merits:

- 1) Extensive informations can be had.
- 2) It is the most cheap and economical method.
- 3) Speedy information is possible.
- 4) It is useful where information is needed regularly.

Demerits:

- 1) The information may be biased the degree of accuracy cannot be maintained.
- 2) Data may not be original.
- 3) Uniformity cannot be maintained.

iv) Mailed Questionnaires

In this method, a questionnaire consisting of a list of question pertaining to the enquiry is prepared. There are blank spaces for answers. This questionnaire is send to the respondents, who are expected to write the answers in the blank spaces. A covering letter is also send along with the questionnaire, requesting the respondents to extend their full co-operation by giving the correct replies and returning the questionnaire duly fielding time. To get quick and better response, The return postage expenses is borne by the investigator, by sending a self-addressed and stamped envelope. This method is adopted by research workers, private individuals, not-official agencies and state & central governments.

Merits:

- 1) Of all methods, the mailed questionnaire method is the most economical.
- 2) It can be widely used, when the area of investigation is large.
- 3) It saves money, labour, and time.
- 4) Error in the investigation is very small, because information is obtained directly from the respondents.

Demerits:

- 1) There is a long delay in receiving questionnaires. Duly filled in.
- 2) People may not give the correct answer. And thus one is led to false conclusion.
- 3) Sometimes the informants may not be willing to give written answers, apart from causing delay.

v) Schedules send through enumerators:

It is the most widely used method of collection of primary data. A number of enumerators are selected & trained. They are provided with standardised questionnaires. A specific training and instructions are given them for filling up Schedules. Each enumerator will be incharge of a certain area. The investigator goes to the informants along with the questionnaire and gets replies to the question in the Schedules and records their answers. He explains clearly the object and the purpose of the enquiry. The difference between the farmer and this method is that in the farmer method, the questionnaire is send to the informants, whereas in this method the investigator carries the Schedules to the informants. This method

is used by public organisation and research institutions.

Merits:

1) This method is very in extensive enquiries.

2) The scope of enquiry can also be greatly enlarged.

3) Even if the respondents are illiterate, this technique can be widely used.

Demerits:

1) This method is time consuming, because the enumerator go personally to obtained the information.

2) Personal bias of the enumerator may lead to false conclusion.

3) It is not suited to all persons due to its costliness.

Secondary Data:

Secondary Data are those data which have been already collected & analyzed by some earlier agency for its own use; and later the same data are used by a different agency.

According to W. A. Neiswanger, "A Primary Source is a publication in which the data are published by the same authority, which gathered by other authorities and for which others are responsible."

Sources of Secondary data:

The various sources of Secondary data can be divided into two broad categories.

i) Published Sources

ii) Unpublished Sources

Published Sources:

Various governmental, international and local agencies published statistical

data chief among them are,

* International publications :

International agencies and international bodies publish regular and occasional reports on economics and statistical matters. They are the UNO, IMF, etc...

* Official Publication of central and State governments :

Departments of the union and the State government regularly publish reports on a number of Subjects. They gathered additional information. Some of the important publications are ;

The Reserve bank of India, Bulletin, Census of India, Statistical abstract of States, Agricultural Statistics of India, Indian Trade Journal, etc...

* Semi - Official publications :

Semi - government institutions like Municipal corporation, district board, etc... publish reports

* Publication of research institutions :

Indian Statistical institution (ISI), Indian council of Agricultural Research (ICAR), Indian Agricultural Statistics Research Institute (ISRI) etc..., Publish the findings of the Research programmes.

* Publication of commercial and financial institution.

* Reports of various committees and commission appointed by the government :

For example : Pay commission reports, land reforms committee reports etc... are source of secondary data.

* Journals and Newspapers

Current and important materials on statistics and economics problems can be obtained from Journal and newspapers like, economic times, capital indian finance, monthly statistics of Trade, etc...

~~Requisites of Good Questu~~

Unpublished sources:

There are various sources of unpublished data. They are the records maintained by various government and private officers, the researchers carried out by individual research scholars in the universities or research institute.

Precautions in the use of Secondary data:

The degree of reliability of Secondary sources is to be assessed

from the source, the compiler and his capacity to produce correct statistics and the users also, for the most part, tend to accept a series, particularly one issued by a government agency at its face values without enquiring its reliability. The secondary data should not be accepted at their face value therefore before using the secondary the investigator should consider the following factors.

a) The suitability of data :

The investigator must satisfy himself that the data available is suitable for the purpose of enquiry. It can be judged by the nature & scope of the present enquiry with the original enquiry.

b) Adequacy of data :

If the data are suitable for the purpose of investigation, then we must consider whether the data are useful or adequate for the present analysis. It can be studied by geographical area covered by the original enquiry.

Ex: If our object is to study the retail price trend of India and if the available data cover only the retail price trend in the State of Tamil Nadu then it could not serve the purpose.

c) Reliability of data :

The Reliability of data can be tested by finding out the agency that collected such data. If the agency has used proper methods in collecting data, Statistics may be relied upon.

Requisites of Good Questionnaire : (Framing a Questionnaire)

[The Questionnaire is the media of communication between the investigator and the respondents. The Success of an investigation depends on the construction of the questionnaire. As Search, at most care and caution are essential for designing or drafting the questionnaires. It requires great care, skill, wisdom, efficiency and experience.] 2m

* The Questionnaire Should be brief:

The number of question in the investigation should be as small as possible, because people do not feel happy in answering a long questionnaire.

All the question must be relevant to the problem under investigation.

* The Question should be simple to understand:

It must also be clear, brief, precise, and Different types of question namely formed to fulfil the object of the investigation.

* Questions should be arranged logically

The Questions must be logical in nature.

* There must be choice:

There are three types of questions

- i) Simple alternative questions
> (Yes or No) (right or wrong) etc.
- ii) Multiple choice questions () () (✓) ()
- iii) Specific Information questions
"What is your name?"

* Proper words should be used in the questionnaire:

Local words which are not in use.

- a) Words representing respect
- b) complex words

* Questions of a sensitive and personal nature should be avoided :

As far as possible, questions of religious or personal or political nature should not be asked.

* Necessary instructions should be given to the informant :

The Questionnaire should give necessary instructions to the informant so that the informant does not face any difficulty.

* Questions related to mathematical ^{not} calculation should be asked :

There are people who do not know mathematics and so such types of questions must be avoided.

* Question should be capable of an Objective answer.

This types of questions is known as 'multiple choice question'. This type is easy for the respondent to answer and also easy for tabulation.

* Questionnaire should look attractive

* Pre-testing the Questionnaire must be done before posting it.

* The Accuracy of the Questionnaire must be judged.