Ph. D. Course Work-2023-24

Research Methodology (UNIT-II)

Dr. Prabal Pratap Singh (9889159477)
(Department of Physics)
CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY
KANPUR-208024 (UP) INDIA
prbalpratapsingh@csjmu.ac.in

DATA

- Research data is any information that has been collected, observed, generated or created to validate original research findings.

- Although usually digital, research data also includes non-digital formats such as laboratory notebooks and diaries.

Meaning And Importance Of Data

- The findings of the answers to the research questions are called collection of data. Data are facts, relevant material, past and present forms as a basis for the research study and analysis. Data serve as a raw material for the analysis in the research purpose. The data's relevancy, adequacy and reliability determine the quality of the findings of a research. During the research, hypothesis is formulated and for testing this hypothesis, data serves as the basis. Data also provides fact and figures, while formulating measurement scale and tables which are analyzed with the help of statistical methods. The data relevancy and availability is very crucial for the scientific process of measurement, analysis, testing and inferences. So, the data is very important.

- [DESIGN OF EXPERIMENTS (DOE)](#)

- Design of experiments (DOE) is defined as a branch of applied statistics that deals with planning, conducting, analyzing, and interpreting controlled tests to evaluate the factors that control the value of a parameter or group of parameters. DOE is a powerful data collection and analysis tools that can be used in a variety of experimental situations.

Types of research data

Research data can take many forms. It might be:

- documents, spreadsheets
- laboratory notebooks, field notebooks, diaries
- questionnaires, transcripts, codebooks
- photographs, films
- test responses
- slides, artefacts, specimens, samples
- collections of digital outputs data files
- database contents (video, audio, text, images)
- models, algorithms, scripts
- contents of an application (input, output, log files for analysis software, simulation software, schemas)
- methodologies and workflows
- standard operating procedures and protocols

Data Collection Process

Data collection process following steps-

- STEP-1: The type of the information required in the investigation is to identified.

- STEP-2: Establishing the facts that are available at present and additional facts required.

- STEP-3: Identification of the sources from where the information can be available.

- STEP-4: Selection of the appropriate information collection method.

SOURCES OF DATA

The availability and quality of data is mainly depend on the source of data.athe various sources of data can be broadly classified as-

a) Primary Sources

b) Secondary Sources

(a) Primary Sources

The sources from which we collect the information first time is known as primary source and information which are collected known as primary data.

Primary data is originated with the specific research undertaking e.g. if research from done to obtain consumer attitude data on a new package design, this would be primary data. The origin of data and not who collected it, is the factor that distinguishes secondary data from primary data. Primary data can be generated by questioning people or by observing selected activities ,but in research, a third method , experimentation is also included.

Sources of collecting Primary data

The primary data are those which are collected fresh and for first time and thus happens to be original in character. Such data published by authors , who themselves responsible for their collection. The sources of collecting the primary data are-

1. Direct Personal Interview

2. Information Received through Local Agencies

3. Telephonic Survey

4. Indirect Personal Interview

5. Survey Through Mailed Questionnaire

6. Questionnaire Sent Through Enumerators

Sources of collecting Secondary data

Secondary data are those which have already been collected by some other agency and which have already being processed. Secondary data are those which have done through the statistical machine at least once. Many times the direct method of collecting is not possible and use must be made of data collected by some other person and agencies, such type of information may be obtained from the records of government, semi-official agencies and private individuals. The main sources of the secondary data are-

1. Official Publication

2. Semi-Official Publication

3. Publication relating to trade

4. Journals/ News Papers

5. Data Collected by Research Agencies

6. Un-published Data

THANKS