Research Methodology
18KP3EC10

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Unit III
RESEARCH PROCESS

Series of various actions, which are necessary to effective research work.

The various stages of research are as follows

1. Formulating the research problem
2. Extensive literature survey
3. Developing the hypothesis
4. Preparing the research design
5. Determining the sample design
6. Collecting the data
7. Analysis of data
8. Hypothesis testing
9. Generalisation and Interpretation
10. Preparation of the report

Formulating a Research Problem

Any question that we want answered and any assumption or assertion that we want to challenge or investigate can become a research problem or a research topic for our study.

Consideration in selecting a research problem

When selecting a research problem there are a number of considerations to keep in mind which will help to ensure that your study will be manageable and that you remain motivated.

- Interest
- Magnitude
- Measurement of Concepts
- Level of Expertise
- Relevance
- Availability of data
- Ethical issues

Steps in formulating a Research Problem

1. Identify a broad field or subject area of interest to you
2. Dissect broad areas into subareas
3. Select what is of most interest to you
4. Raise research questions
5. Formulate Objectives
6. Assess your Objectives
7. Doble check

Role of Review of Literature

The review of literature is a summary of all the reviews from various research literatures related to the current study carried out by a researcher.

A literature review is an assessment of a body of research that addresses a research question.

Characteristics of a good quality Review of literature

- A good review of literature must be comprehensive
- It should include up-to-date references
- It should be systematic
- It should be reproducible
- It should be free from bias
- It should be well written
- It should be in the form of sum of its parts
- It should be clearly searched and selected
- Accurate references should be given in the review

Research Design

- A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

- Research design have following parts
  1. Sampling design
  2. Observational design
  3. Statistical design
  4. Operationaldesign

Features of Good Research Design

A research design appropriate for a particular research problem,usually involves the following features.

- The mean of obtaining information
- The availability and skills of the researcher and his staff,if any
- The objective of the problem to be studied
- The nature of the Problem to be studied
- The availability of time and money for the research work

Model Building

- It is a simplified representation of a more complex process or condition
- It may be a quantitative model which are commonly employed in the analysis and prediction of consumer behavior
- It may be a qualitative model which have the capability of providing the user with numerical outputs, which may be measurements of traveler flows and expenditures, forecasts on returns of investments or estimates of changes in market share etc

Formulating Hypotheses

Begins with an assumption called hypothesis

Hypothesis

- Claim about a population parameter
- An unproven proposition or supposition that tentatively explains certain facts or phenomena
- A proposition that is empirically testable

Testing of Hypothesis

- A set of logical and statistical guidelines used to make decisions from sample statistics to population characteristics.

The intent of hypothesis testing is to formally examine two opposing conjectures(hypotheses), Ho and HA

- These two hypotheses are mutually exclusive andexhaustive.
- Sample information is collected and analysed.

Basic Concepts in Hypotheses testing

- Null hypotheses and Alternate hypotheses
- Level of Significance
- Critical Region
- Decision Rule

Concepts Contd….

- Type I and Type II Errors
- Power of Test
- Two Tailed and One Tailed Tests
- One Sample and Two Sample Tests
- Parametric and Non- ParametricTests

Unit IV

D

Data refers to information or facts.

Data could be broadly classified as 1.Primary data and 2. Secondary data

Primary data is known as the data collected for the first time through field survey

Sources of Data

Sources of Primary Data

- Questionnaire or Schedule
- Interview
- Observation
- Feedback form
- Sales force Opinion
- Pantry Audit
- Consumer Panels
- Collection through mechanical devices
- Projective techniques
- Content analysis

Sources of Secondary Data

- Book
- Periodicals or journals
- Research thesis and Dissertations
- Bibliographies
- Foot notes
- Encyclopaedia
- Statistical data source
- Directories and year book

Primary Data Collection Technique

- Interview(direct /indirect)
- Schedule
- Questionnaire Survey
- Focus Group Discussion
- Community Forums and Public hearings
- Observation
- Case Studies
- Key informants interview
- Internet/E-mail/SMS

Questionnaire

A set of printed or written questions with a choice of answers, devised for the purpose of a survey or statistical study.

Mechanics of Questionnaire Construction

The following are the points to be given importance while designing a questionnaire:

- Questionnaire should be printed/cyclostyled/photo-copied.
- The first part of the questionnaire should specify the object or purpose for which the information is required.
- An assurance to the respondent that the information furnished would be kept confidentially must be given.
- Some introduction about the person/organization who is collecting the information should be given.
- Questions should be constructed using simple language and technical jargons,terms,concepts should all be avoided.
- Questions should never be lengthy.
- Each question should be specific and clear.
- Personal questions on wealth,habits etc could be avoided.

Mechanics of Questionnaire Construction contd….

- Questions should be given in a sequence.
- Questions should not require any referencing before replying.
- Questions should not force the respondent to recall from his memory anything to answer.
- Questions needing computation /calculation/consultation should be avoided.
- Questions on sentiments/belief/faith should be avoided.
- Repitation of question should be eliminated.
- Sufficient space should be given for answering questions.
- The questionnaire should be made attractive.
- If any diagram or map is used,then it should be printed clearly.
- Questions,which,cross check the response,could be built in to the questionnaire.
- Instructions regarding how to return the filled up questionnaire must be given.

Sources of Secondary Data

- NSSO
- CSO
- Economic Survey
- Season and crop Report
- Agricultural Census
- Livestock Census
- Annual Survey of Industries
- RBI Reports
- World Development Reports
- Human Development Reports
- Integrated Data Repository

Data Processing

Processing of data includes the following steps

- Editing the Data
- Coding the Data
- Classification of Data
- Tabulation of Data

Editing the data

- It is careful scrutiny of data to insure that the data are accurate and eliminate errors as far as possible.
- Following are the points taken into account for editing the data.

  Completeness

  Accuracy

  Uniformity

Coding of Data

- It refers to the process of assigning numerals or other symbols to answers so response can be put into a limited number of category.
- This is helpful when sample size is large and question consists large number of sub items.
- Coding can be done manually or through computer.

Classification of Data

- After editing and coding is over, the process of classifying or grouping of data starts,
- Classification is done naturally according to similarity or sameness of replies.
- Classification may be quantitative or qualitative.

Tabulation of Data

- Tabulation is the orderly and systematic presentation of numerical data in a form designed to elucidate the problem under consideration.
- Simply saying, it is concise,logical and orderly arrangement of data in a columns and rows.

Analysis of Data

- Analysis mean the categorizing ,ordering,manipulating and summarizing of data to obtain answers to research question.

Analysis of data can be done in following ways as below

Percentage analysis

Statistical analysis

Gross Tabulation

Interpretation of Data

- Explaining what are the findings of the study or research indicate is known as interpretation.

Unit V
Report Writing

- Report writing is a oral or written presentation of evidence and findings in such detailed form so as to be readily understood and assessed by the reader.
- A research report is the ultimate output of research process.

Structure of a Thesis

- Preliminary Section
- Body of the Thesis
- Reference or Appendix

Preliminary Section

- Title page
- Certificate from the guide
- Declaration by the candidate
- Acknowledgement
- Table of contents
- List of Tables
- List of figures
- List of Appendixes

Body of the Thesis

- Introduction
- Review of Literature
- Methodology
    - Period of study
    - Area of study
    - Sources of data
    - Sample design
    - Tools of analysis
    - Limitations of the study
- Results and discussion
- Summary and Conclusion

Footnote and its uses

Footnote is a note appears at the bottom of page to cite refer from the document.

Uses

- To indicate the source of information
- To acknowledge facts and ideas borrowed
- To guide the reader with sufficient information
- To provide legal protection to publish substance or words from another writer
- To distinguish the researcher’s contribution from those of other scholars
- To put cross reference to some other parts.

Citations and Presentation of Tables, Diagrams,Charts and Maps

- Citation is a reference to a specific legal case,statute or other legal document

Tables:Tables are numbered consecutively throughout the entire report including those tables that may be placed in the appendix.

Figures/Diagrams,Charts:The commonest forms of figures used in reports are line graphs, bar graphs,pie charts,area and volume charts,pictorial charts,maps,diagrams of apparatus and photographs.

Maps:When geographical location or identification is important, maps maybe used.

Bibliography

- A bibliography is an orderly list of resources on a particular subject
- A bibliography provides the full reference information for all the sources.
- The purpose of a bibliography is to allow the reader to trace the sources used.

Reference Material

1.Research Methodology,P. Saravanavel,Kitab mahal,Allahabad.

2.Research Methodology,P,Ravilochanan,Margham publications,Chennai.