STUDY MATERIAL

Prepared for

II M.Com (III Semester)

Subject

Research Methodology

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RESEARCH METHODOLOGY

PKCM35

UNIT - I   Introduction to Research Methodology:

Research and research methodology – Methods of social research – Scope for research – Procedures in research – Fact concepts and theory – Scientific method.

UNIT - II   Selection of Research Problem:

Selection and formulation of research problem – Research design – sampling design – Methods – Sample size determination – Sampling errors – Causes and control – Selection of appropriate method of sampling.

UNIT - III   Methods of Data Collection:

Methods of data collection – Primary – Questionnaire – Observation methods – Designing questionnaire / Interview schedules – Secondary data.

UNIT - IV   Statistical Analysis:

Statistical analysis – Brief Introduction to computer software to do statistical analysis and websites – Diagram – Graphs – Commonly used statistical tools in research – Scaling techniques.

UNIT - V   Processing of Data:

Processing of data – Analysis of data – Interpreting statistical / Graph data- Research Report – Problems and precautions – Conventions in writing a Research Report – Annexure Bibliography.

UNIT - I

INTRODUCTION TO RESEARCH METHODOLOGY

RESEARCH

The search for knowledge through objective and systematic method of finding a proper and feasible solution to a problem is popularly known as research.

DEFINITION

Research, according to Redman and Mory is a "systematised effort to gain new knowledge".

VARIOUS CRITERIA OF GOOD RESEARCH

a) At the outset there should be a clear-cut declaration of the purpose of the research.

b) The research procedure adopted should be described in detail to help succeeding researchers to repeat the research for further advancement, maintaining the continuity of what has already been attained.

c) The analysis of data should be adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked and cross-checked with utmost care.

OBJECTIVES

i) To highlight the significance of the phenomenon under study.

ii) To develop new tools, concepts and theories for a better study.

iii) To test the hypothesis of casual relationship between variables.

iv) To write the report based upon the findings of the research.

CHARACTERISTICS OF RESEARCH

1) Research is systematic enquiry	8) Empirical
2) Clearly defined purpose	9) Expertise knowledge
3) Research is undertaken to establish facts	10) Verifiable
4) Objectivity	11) Honesty
5) Solve a problem	12) Logical study
6) Generalisation	13) Rational
7) Universal	14) Gathering new data

TYPES OF RESEARCH

i) Applied Research	v) Experimental Research
ii) Analytical Research	vi) Pure or Fundamental or Basic Research
iii) Descriptive Research	vii) Historical Research
iv) Exploratory Research	viii) Other types of Research

APPROACHES TO RESEARCH

i) Quantitative Approach	iv) Experimental Approach
ii) Qualitative Approach	v) Simulation Approach
iii) Inferential Approach	

METHODS OF RESEARCH

I. SURVEY METHOD

Survey is a fact finding' study. Under this method of research the researcher is interested in knowing something about the whole population.

II. CASE STUDY METHOD

A case study is the most popular method of research. It is a qualitative, intensive, stimulating and comprehensive study of a social phenomenon. Though the field of study is comparatively limited unlike the other types of research it is an in depth comprehensive study of a person, a social group, an episode, a process, a situation, a programme a community, an institution or any other social unit.

III. EX-POST FACTO METHOD

It is a systematic field study which aims at discovering the relations and interactions among variables in social institutions and actual life situations.

UNIT - II

SELECTION OF RESEARCH PROBLEM

RESEARCH PROBLEM

A research problem refers to the practical difficulties which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.

BASIC STEPS IN THE SELECTION AND FORMULATION OF A RESEARCH PROBLEM

i)   Identification of the research problem

ii) Selection of the research problem

iii) Formulation of the problem

iv) Choice of a theoretical frame work for the research problem

v)   Formulation of hypothesis

vi) Operational definition of concepts

vii) Methodology

viii)   Analysis of data and testing of hypothesis

ix) Stating the results

IMPORTANT SOURCES OF PROBLEM SELECTION

i)   Theory of researcher's own interest

ii) Academic experience

iii) Problems related to technological changes

iv) Problems related to social changes

v)   Unexplored areas

vi) Research

vii) Problems identified through various organisations

viii)   Problems identified through authorities / Policy makers

TYPES OF RESEARCH PROBLEMS

i) Empirical Problems   ii) Analytical Problems   iii) Normative Problems

CRITERIA OF A GOOD RESEARCH PROBLEM IN SOCIAL RESEARCH

i) The problem should express the relationship between two or more variables.

ii) The problem should be related 'clearly and un-ambiguously in the form of questions.

iii) Possibilities for empirical verification and testing.

iv) Availability of a suitable guide and approval of the topic from the competent authority.

v) The research problem should be a novel and original one.

vi) It should be neither too narrow nor vague.

vii) A good research problem should enrich knowledge or improve the current practices.

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". - Claire Seltltiz and others.

"A research design is the logical and systematic planning and directing a piece of research". - Pauline V.young.

NEED FOR A RESEARCH PLAN

A research design facilitates the researcher to complete the various research operations efficiently by yielding maximum information with minimum expenditure as to effort, time and money. Moreover, researcher can see the whole study structure and also realize the place and importance of the successive steps which he has to take in the total research work. In addition, the design helps the researcher organize his ideas in a form whereby it will be possible for him to look for flaws and inadequacies.

CRITERIA OF A GOOD RESEARCH DESIGN

i) Objectivity   iii) Validity

ii) Reliability   iv) Generalisation

FACTORS AFFECTING RESEARCH DESIGN

1) Availability of sufficient data
2) Availability of time
3) Availability of resources
4) Ability of the Researcher
5) External Factors
6) Result Desired

COMPONENTS OF A RESEARCH DESIGN

i) Introduction
ii) Statement of the problem
iii) Review of the previous studies
iv) Scope of the study
v) Objectives of the study
vi) Hypotheses of the study
vii) Operational definition of concepts
viii) Reference period
ix) Collection of data
x) Tools for collection of data
xi) Sampling procedure
xii) Statistical tools used for analysis
xiii) Limitations of the study
xiv) Chapter arrangement
xv) Findings and suggestions

CLASSIFICATIONS OF RESEARCH DESIGNS

i) Exploratory (or) Formulative study
ii) Descriptive study
iii) Diagnostic study
iv) Experimental study
v) Historical study
vi) Inferential design
vii) Sample surveys
vii) Field studies and so on

STEPS IN PREPARING A RESEARCH DESIGN

1) The title
2) Statement of the problem
3) Review of literature
4) Sources of information to be tapped
5) Development of Bibliography
6) Nature
7) Objectives of the study
8) Socio cultural context of study
9) Geographical areas to be covered
10) Time period
11) Dimensions of the study
12) The basis for selecting the data
13) Techniques of study
14) The control of error
15) Chapter arrangement

SAMPLING

Sampling is the process of selection of a sample with a view to obtain information or draw inference about a population.

SAMPLING UNITS

Sampling units are the target population elements available for selection during the sampling process. In a simple, single - stage sampling, the sampling units and the population elements may be the same.

SAMPLING TECHNIQUE

It is the procedure adopted to select a sample.

PARAMETERS VS STATISTICS

A parameter is a characteristic of a population whereas a statistics is a characteristic of a sample.

SAMPLE SIZE

This means how many items be selected from the universe to constitute a sample. The size of sample should be optimum. An optimum sample may be defined as that sample which fulfills the requirements of efficiency, representativeness, reliability and flexibility.

NEED FOR SAMPLING OR PURPOSE OF SAMPLING

i) Time and Cost

ii) Saves labour

iii) Accuracy

iv) Speed of data collection

v) Availability of Population element

SAMPLE SIZE

The size of the sample must be optimum. If a larger sample is selected than the optimum size, then it involves more cost and time. On the other hand, if a small sample is chosen the results obtained will be relatively less accurate.

The actual size of the sample depends on the following factors,

1) The nature of population

2) Complexity of Tabulation

3) Problems relating to collection of data

4) Types of sampling

5) The mathematics of sample size

6) Margin of error or limit of accuracy

7) Availability of resources

SAMPLING AND NON- SAMPLING ERRORS

The term 'error' refers to the difference between the value of a "statistics" and that of corresponding 'parameter'. That is the difference between a population value and sample value

The error arising due to drawing inferences about the population on the basis of few observations is termed sampling error.

Error arising at the stage of ascertainment and processing of data, which are termed non-sampling errors.

SAMPLING ERRORS

Errors may be of two types is sampling. They are

1) Sampling errors

2) Non sampling errors

1) Sampling errors

The errors which arise to the use of sampling surveys are known as the sampling errors. Sampling errors may be of two types.

They are

    i) Biased errors

    ii) Unbiased errors

i) Biased errors

The errors that occur due to a bias of prejudice on the part of the informants or enumerator is selecting, estimating, measuring instru. ments, are called biased errors. Example, purposive sampling method may be adopted in the place of a simple random sampling method. These erors are cumulative in nature and increase when the sample size also increases. These errors are also called as biased sampling errors.

ii) Unbiased errors

Unbiased errors arise due to chance differences, between the members of the population included in the sample and those not in- cluded. It is known as random sampling error. These errors may arise accidentally without any bias or prejudice. These errors occur due to faculty planning of statistical investigation.

The random sampling errors decreases on an average as the size of the sample increases. Hence, such errors is also known as non -cumulative or compensating error.

CAUSES OF BIAS

Bias may arise due to

    i) Faulty process of selection

    ii) Faulty work during the collection and

    iii) Faulty method of analysis

Faulty selection of the sample may give rise to bias in a number of ways, such as

    i) Purposive sampling

    ii) Selection of sample in a haphazard way

    iii) Substitution of the selected item in the sample by another.

    iv) Incomplete investigation or response, etc.

CAUSES ON NON-SAMPLING ERRORS

i) Sampling operations	v) Concealment of Truth
ii) Non interviews	vi) Processing error
ii) Adequacy of Respondent	vii) Errors committed during presentation
iv) Lack of knowledge	and printing of tabulated results.

SAMPLE

A sample is the part of the population or universe selected for the purpose of investigation. "A sample is a smaller representation of the larger whole". - Goode and Hatt.

STEPS TO BE TAKEN TO MAKE THE SAMPLE USEFUL AND RELIABLE

i) Defining the population or universe to be surveyed.

ii) Specifying the sampling frame

iii) Specifying sampling unit

iv) Specifying method of sampling

v) Determining the size of sample

vi) Specifying the sampling plan

vii) Selection of the sample

METHODS OF SAMPLING

I. Random Sampling Methods

    i) Simple Random Sampling

    ii) Restricted Random Sampling

        a) Stratified Sampling

        b) Systematic Sampling

        c) Cluster Sampling

II. Non-random Sampling Methods

    i) Purposive Sampling

    ii) Quota Sampling

    iii) Convenient Sampling

UNIT - III

METHODS OF DATA COLLECTION

DATA

Data refer to the facts, figures, or information collected for a specific purpose. There are two types of data, namely:

        i) Primary data and

        ii) Secondary data

METHODS OF COLLECTION OF PRIMARY DATA

    I.   Through experiment

    II.   Through survey

        i)   Observation method

        ii) Interview Method

            a) Personal Interview

            b) Telephonic Interview

        iii) Mailed Questionnaire Method

        iv) Through Schedules

CLASSIFICATION OF SECONDARY DATA

Secondary data may be grouped into two

i) Common external sources

Secondary data obtained from books, journals, reports, Government publications, Publications of organisations, professional bodies, project reports, media, commercial sources etc are known as common external sources.

ii) Internal and proprietary data

These data are generally available in the routine business in various departments like finance, production, personnel, sales, research and development department, etc., Data on employees' salary from pay roll, sales amounts from sales journal, raw materials from stock registers, labour and manufacturing expenses from production records and cash receipts from cash books, etc. are internal data.

ADVANTAGES OF SECONDARY SOURCES OF DATA

1) Cost and time

2) Quickly and cheaply

3) More time for data analysis

4) Re-analysis may off new interpretations

5) Bench mark

6) Sole source of information

7) Subgroup or subset analysis

LIMITATIONS OF SECONDARY DATA

1) Lack of familiarity with data

2) Complexity of the data

3) Appropriateness

4) Absence of key variables.

QUESTIONNAIRE

A questionnaire the list of questions used in survey method for collection of data. This questionnaire is generally filled in by the informants. These questionnaires are handed over to the researcher who compiles and tabulates the data from the questionnaire.

INTERVIEW SCHEDULE

If the questionnaire is filled in by the enumerator himself (for which answers are obtained from informants) it is called the interview schedule. For this purpose, the enumerator approaches the respondents, asks questions (contained in the questionnaire and fill in the answers obtained from them in the questionnaire.

PROCESS OF CONSTRUCTION OF SCHEDULE OR QUESTIONNAIRE

i) Data need determination

ii) Preparation of 'Dummy' tables

iii) Determination of the respondents 'level'

iv) Selection of data gathering method

v) Instrument drafting

vi) Evaluation of the draft instrument

vii) Pre - testing

vii) Designing the format

TYPES OF QUESTIONNAIRE AS A TOOL FOR DATA COLLECTION

i) Structured Questionnaires

ii) Non-structured questionnaires

iii) Closed form Questionnaires

iv) Open form Questionnaires

v) Mixed questionnaire

vi) Opinion Questionnaires

vii) Pictorial Questionnaires

viii) Verbal Questionnaires

DISTINGUISH BETWEEN QUESTIONNAIRES AND SCHEDULES.

Through the Questionnaire and schedule seem to be alike; there are some differences between the two.

	Questionnaires	**Schedules**
1.	Questionnaires are sent to informants through mail and filled in by informants.	Schedules are filled up by the enumerators or researchers by putting the questions to the informants in person.
2.	Less expensive	More expensive
3.	Non-response is usually high.	Non-response is generally low.
4.	Identity of respondent is not known.	The identity of respondent is known.
5.	Questionnaire method consumes more time to finish the collection of data.	It requires lesser time.
6.	Personal contact of respondent is not possible.	Personal contact of respondent is possible.
7.	This method can be used only when informants are literates.	Tis method can be used even when the respondents are illiterates.
8.	Wide coverage of sample is possible.	It is difficult for a wide coverage of sample.

INTERPRETATION

"Scientific interpretation seeks for relationship between the data of study and between the study findings and other scientific knowledge." - Jahada and Cook.

DIFFERENT FORMS OF INTERPRETATION

    i)   Relationship

    ii) Proportion

    iii) Percentages

    iv) Averages or other measures of comparison

TECHNIQUES OF INTERPRETATION

    i)   A Researcher must give reasonable explanation on the relation and the researcher must interpret relationship in terms of the underlying process. This is the technique of how generalisation should be done and concept be formulated.

    ii) Extraneous information must be considered while interpreting the final results.

    iii) It is advisable to get frank and honest opinion of experts.

    iv) Before generalization all relevant factors must be considered.

PRECAUTIONS IN INTERPRETATIONS

    i)   Failure to see the problem in proper perspective.

    ii) Failure to appreciate the relevance of various elements.

    iii) Ignoring selective factors.

    iv) Misinterpretation due to unstudied factors.

    v) Difficulties of interpretative evaluation.

UNIT - IV

STATISTICAL ANALYSIS

ANALYSIS OF DATA

Analysis of data is a process of inspection, cleaning, transforming and modeling data with the goal of discovering useful information, suggesting conclusions and supporting decision making.

TYPES OF STATISTICAL ANALYSIS

1) Descriptive analysis

Descriptive analysis is a set of brief descriptive co efficient that summarises a given data set, which can either be a representation of the entire population of a sample. Following measures are used to describe the data set.

a) Measures of central tendency

b) Measures of Dispersion

2) Inferential Analysis

Inferential analysis is concerned with drawing inferences and conclusions from the findings of a research study. There are two areas of statistical inference namely.

a) Statistical estimation and

b) Testing of hypothesis

SCALING

Scaling is the procedure to determine the quantitative measure of abstract concepts like leadership style, brand image of a product, job satisfaction and dissatisfaction, customers attitude, customers' satisfaction and the like. This procedure deals with assigning numbers to a property of object to impart some of the characteristics of numbers to the property studied.

CLASSIFICATION OF SCALING PROCEDURE

i) Subject orientation

ii) Response form

    a) Categorical Scales

    b) Comparative Scales

iii) Degree of subjectivity

iv) Scale properties

    a) Nominal Scale

    b) Ordinal Scale

    c) Interval Scale

    d) Ratio Scale

UNIT - V

PROCESSING OF DATA

DATA PROCESSING

Data processing consists of editing, coding, categorisation and tabulation.

Data processing is an intermediary stage between collection of data and their analysis and interpretation

STEPS IN DATA PROCESSING

1. Identifying the type of information

2. Editing the data

      i) Completeness

      ii) Accuracy

      ii) Uniformity

3. Coding of data

4. Classifying and tabulation.

REPORT

A report is the exposition of a research project. It is the end product of a research activity. Thus writing of report is the last step in a research study and requires a set of skills. A report is also defined as "a statement of results, events, conditions, progress or interpretation of information".

TYPES OF REPORT

   I.   Oral Report

  II.   Written report

       i) Information report

       ii) Research report

           a) Technical report

           b) Popular report

STEPS INVOLVED IN WRITING REPORT

    i)   Planning and organising the report

    ii) Preparation of rough draft

    iii) Rewriting and polishing

    iv) Preparation of the final bibliography

    v)   Writing the final draft.

PRECAUTIONS FOR WRITING RESEARCH REPORT

A report is a very formal document that is written for a variety of purposes in the sciences, social sciences, engineering and business disciplines. While writing research report, a researcher has to consider the following precautions.

1. While writing the report use simple words. Complex sentences should not be used.

2. Adequate care is taken to see that there is no spelling or grammatical errors.

3. The researcher has to avoid awkward repetition, vagueness and unnecessary abstraction.

4. The report should be prepared in logical sequence.

LAYOUT OF THE RESEARCH REPORT

The layout of the research report contains three main headings.

    1) Preliminary Pages

    2) Main Test

    3) The End Matter

1) Preliminary Pages

The report should have

    i) The title with the date

    ii) Acknowledgment

    iii) The table of contents

    iv) List of Tables

    v) List of Graphs, Charts etc..

2) Main Test (Body of the Report)

Chapter I - Introduction

       1.1 Introduction to the study

       1.2 Profile of the study

       1.3 Significance of the study

       1.4 Statement of the problem

       1.5 Scope of the study

       1.6 Objectives of the study

       1.7 Hypotheses of the study

Chapter 2 - Review of Literature

       2.1 Tools or Methods used in similar studies

       2.2 Findings and conclusions of earlier studies

       2.3 Lacunae of available literature.

Chapter 3 - Research methodology

       3.1 Nature of the research design

       3.2 Methods of collection of data

       3.3 Sampling design and sample size

       3.4 Techniques of data collection

       3.5 Pretesting of tools

       3.6 Analytical tools

       3.7 Period of study

Chapter 4 - Analysis and interpretation of data and data are analysed

Chapter 5 - Summary and Conclusion

3) The End Matter

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