

Syllabus

EXT -504 RESEARCH METHODS IN BEHAVIOURAL SCIENCES 2+1

Objective

This course is designed with a view to provide knowledge and skills in methods of behavioural sciences research and student will learn the Statistical Package for Social Sciences (SPSS) for choosing appropriate statistics for data analysis.

Theory

UNIT-I

Research — Meaning¹ importance, characteristics. Behavioural sciences research — Meaning, concept and problems in behavioural sciences research Types and methods of Research — Fundamental, Applied and Action research, Exploratory, Descriptive, Diagnostic, Evaluation, Experimental, Analytical, Historical, Survey and Case Study. Review of literature — Need, Search Procedure, Sources of literature, Planning the review work. Research problem — Selection and Formulation of research problem and guiding principles in the choice of research problem, Factors and criteria in selection of research problem, statement of research problem and development of theoretical orientation of the research problem.

UNIT-II

Objectives — Meaning, types and criteria for judging the objectives. Concept and Construct — Meaning, role of concepts in research and Conceptual frame work development in research. Variable — Meaning, types and their role in research. Definition — Meaning, characteristics of workable definitions, types and their role in research. Hypothesis — Meaning, importance and functions of hypothesis in research, Types of hypothesis, linkages, sources, problems in formulation and criteria for judging a workable hypothesis. Measurement — Meaning, postulates and levels of measurement, Use of appropriate statistics at different levels of measurement, criteria for judging the measuring instrument and importance of measurement in research. Sampling — Universe, Sample and Sampling-Meaning, basis for sampling, advantages and limitations, size and factors affecting the size of the sample and sampling errors — Methods of elimination and minimizing, Maximinon Principle, Sampling — Types of sampling and sampling procedures.

UNIT -III

Research Designs — Meaning, purpose and criteria for research design, Types, advantages and limitations of each design. Experimental design — Advantages and limitations. Data Collection devices - Interview — Meaning, purpose, types, techniques of interviewing and advantages and limitations. Enquiry forms and Schedules — Meaning, types of questions used, steps in construction and advantages and limitations in its use. Questionnaires - Meaning, difference between

schedule and questionnaire, types of questions to be used, pre-testing of the questionnaires or schedules and advantages and limitations. Validity — Meaning and methods of testing. Reliability — Meaning and methods of testing. Check lists — Meaning, steps in construction, advantages and limitations in its use.

UNIT -IV

Rating scales — Meaning, types, limits in construction, advantages and limitations in its use. Observation — Meaning, types, tips in observation, advantages and limitations in its use. Case studies — Meaning, types, steps in conducting, advantages and limitations in its use. Social survey — Meaning, objectives, types and steps in conducting, advantages and limitations. Data processing — Meaning, coding, preparation of master code sheet, analysis and tabulation of data, Statistical Package for Social Sciences (SPSS) choosing appropriate statistics for data analysis based on the level of measurement of variables. Report writing — Meaning, guidelines to be followed in scientific report writing, References in reporting.

Practical

Selection and formulation of research problem - Formulation of objectives and hypothesis-Selection of variables based on objectives-Developing the conceptual framework of research. Operationally defining the selected variables-Development of data collection devices.-Testing the validity and reliability of the data collection instruments.- Pre-testing of the data collection instrument-Techniques of interviewing and collection of data using the data collection instruments-Data processing, hands on experiences on SPSS, coding, tabulation and analysis. Formulation of secondary tables based on objectives of research. Writing report, Writing of thesis and research articles- Presentation of reports.

Suggested Readings

1. Chandrakandan K, Venkatapirabu J, Sekar V & Anand Kumar V. 2000. Tests and Measurements in Social Research. APH Publ.
2. Kerlinger FN. 1973. Foundations of Behavioural Research. Holt Rhinehart.
3. Kothari CR, 1964. Research Methodology, Methods and Techniques. Chaitanya Publ. House,
4. Krishnaswami OR & Ranganatham M. 2005. Methodology of Research in Social Sciences. Himalaya Pubi. House.
5. Mulay S & Sabaratnam VE. 1 983. Research Methods in Extension Education. Manasavan.
6. Ranjit Kumar. 1999. Research Methodology - A Step by Step Guide for Beginners. Sage Publ.

Lecture 1

RESEARCH: MEANING, IMPORTANCE, CHARACTERISTICS

Research is a derivative of the French word “Recherche” means quest, pursuit, search for truth.

Meaning

Composed of two syllables “Re and “Search”

- **Re**= Again/ Over again/ New
- **Search**= To examine closely and carefully

The word “research” means searching again or to search for something new or to modify the existing one. In this sense, the word research signifies knowing something new or getting more knowledge about it.

The Advanced Learner’s Dictionary of Current English lays down meaning of research as “a careful investigation or inquiry especially through search for new facts in any branch of knowledge.”

Definition:

- ✓ Redman and Mory (1923) define research as a “systematized effort to gain new knowledge.”
- ✓ According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.
- ✓ D. Slesinger and M. Stephenson in the Encyclopedia of Social Sciences (1930) define research as “the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art.”

According to Kerlinger (1964); scientific research is systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomenon.

Characteristics of research:

- 1) **Controlled:** implies that, in exploring causality in relation to two variables, your set up your study in a way that minimizes the effects of other factors affecting the relationship. This can be achieved to a larger extent in physical sciences,

but extremely difficult in the social sciences as research is carried out on issues relating to human beings.

- 2) Empirical: this means that any conclusions drawn are based upon hard evidence gathered from information collected from real-life experiences or observations.
- 3) Logical: research is based on valid procedures and principles.
- 4) Systematic: this implies that the procedures adopted to undertake an investigation follow a certain logical sequence. The different steps cannot be taken in a haphazard way. Some procedures must follow others.
- 5) Replicable: research design and procedures are repeated to enable the researcher to arrive at valid and conclusive results.
- 6) Valid and verifiable: this implies that whatever you conclude on the basis of your findings is correct and can be verified by you and others.
- 7) Critical – research exhibits careful and precise judgment.

Significance of research:

- 1) It provides the basis for nearly all govt. policies in our economic system.
- 2) It helps in solving various operational and planning problems of various sectors.
- 3) It is aid to decision making.
- 4) It establishes the relation between variables.
- 5) It provides a basis for innovation.
- 6) It facilitates the process of thinking, analysis, evaluation and interpretation of various situations.

Objectives of research:

- 1) To investigate a subject
- 2) To collect data regarding the problem
- 3) To conduct logical and objective study
- 4) To conduct a systematic enquiry of the subject
- 5) For carefully recording, reporting and presenting the facts

Criteria for Good research:

- 1) Purpose should be clearly defined
- 2) Common concept should be used that can be understood by all.
- 3) Research procedure should be explained in detail
- 4) Research design should be carefully planned
- 5) Research should declare all the possible errors and their possible impact on findings
- 6) Analysis of data should be sufficiently adequate to reveal significance
- 7) The methods of analysis should be appropriate.
- 8) The validity and reliability of the data should be checked carefully

9) The researcher has good command over research methodologies

Research process:

Research process consists of a series of steps or actions required for effectively conducting research. The following are the steps that provide useful procedural guidelines regarding the conduct of research:

1. Formulating the research problem

There are two types of research problems, viz., those relate to states of nature and those which relate to relationship between variables.

Essentially two steps are involved in formulating the research problem, viz., understanding the problem thoroughly and rephrasing the same into meaningful terms from an analytical point of view.

2. Extensive literature survey

Once the problem is formulated, a brief summary of it should be written down.

3. Development of working hypothesis

Formulate hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. Hypothesis should be very specific and limited to the piece of research in hand because it has to be tested. The role of the hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track.

4. Preparing the research design

The function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. □ Research purpose may be grouped into four categories, viz., (1) Exploration, (2) Description, (3) Diagnosis, and (4) Experimentation.

5. Determining sample design

The researcher must design a sample. It is a plan for taking its respondents from a specific areas or universe. The sample may be of two types:- Probability Sampling and Non-probability Sampling.

6. Collecting data

Data collection is the most important work, is researcher. The collection of information must be containing on facts which is from the following two types of researcher.

Primary Data Collection: Primary data may be from the following.

- (i) Experiment
- (ii) Questionnaire
- (iii) Observation
- (iv) Interview

Secondary data collection: it has the following categories:

- (i) Review of literature
- (ii) Official and non-official reports

(iii) Library approach

7. Execution of the project

If the execution of the project proceeds on correct lines, the data to be collected would be adequate and dependable. The researcher should see that the project is executed in a systematic manner and in time. Steps should be taken to ensure that the survey is under statistical control so that the collected information is in accordance with the pre-defined standard of accuracy.

8. Analysis of data

The analysis of data requires a number of closely related operations such as establishment of categories. This stage mainly include: Coding, Editing, Tabulation

9. Hypothesis testing

Research data is then forwarded to test the hypothesis. Do the hypothesis are related to the facts or not? To find the answer the process of testing hypothesis is undertaken which may result in accepting or rejecting the hypothesis.

10. Generalization and interpretation

The acceptable hypothesis is possible for researcher to arrival at the process of generalization or to make & theory. Some types of research has no hypothesis for which researcher depends upon on theory which is known as interpretation

11. Preparation of the report or presentation of the results

Researcher has to prepare the report of what has been done by him. Writing of report includes: (i) the preliminary pages; (ii) the main text, and (iii) the end matter.

In its preliminary pages the report should carry title and date followed by acknowledgments and foreword. Then there should be a table of contents.

The main text of the report should have the following parts: Introduction, summary of findings, main report and conclusion.

At the end of the report, appendices should be enlisted in respect of all technical data. Bibliography, i.e. list of text books, journals, reports etc. consulted, and index should also be given in the end.

Lecture 2

BEHAVIOURAL SCIENCES RESEARCH

Meaning and Concept

Behaviour is a response of an individual or group to an action, environment, person, or stimulus.

1. Behaviour is everything a person does.
2. Behaviour is
 - that can be observed
 - that can be heard/seen
 - that can be measured

$$B = F(P,E)$$

B = Behaviour

F = Behaviour function

P = Person

E = Environment around the person

Behaviour is the function of person's characteristics and the characteristics of surrounding environment

Broadly defined, behavioural science is the study of human habits, actions, and intentions. Combining knowledge of sociology, psychology and anthropology with strong observation, research, and communication skills, a behavioural scientist works with communities and individuals examining behaviour and decision-making.

Behavioural science has three domains: 1. Psychology 2. Sociology 3. Anthropology.

The term gained currency in the 1950s in the United States; it is often used synonymously with "social sciences," although some writers distinguish between them.

The terms behavioural sciences and social sciences are often used interchangeably. Though these two broad areas are interrelated and study systematic processes of behaviour, they differ on their level of scientific analysis of various dimensions of behaviour.

Behavioural sciences abstract empirical data to investigate the decision processes and communication strategies within and between organisms in a social system. This involves fields like psychology, social neuroscience ethology, and cognitive science. In contrast, social sciences provide a perceptive framework to study the processes of a social system through impacts of social organization on structural adjustment of the individual and of groups. They typically include fields

like sociology, economics, public health, anthropology, demography and political science.

What is the difference between Behavioural Science and Social Science?

- Behavioural science focuses on the behaviour of human beings and animals whereas Social sciences focus on the human being in the social context.
- Behavioural sciences are more experimental in nature whereas, in social sciences, this quality is rather vague.
- Behavioural sciences have a high level of empiricism, but in social sciences, it is low.
- Behavioural sciences concentrate on the communication and decision related themes whereas social sciences focus on the larger social systemic themes.

Lecture 3

TYPES AND METHODS OF RESEARCH

(A) Fundamental (Pure/Basic) and Applied (Action) research

Pure research involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. Thus such work often involves the testing of hypotheses containing very abstract and specialized concepts.

Pure research is also concerned with the development, examination, verification and refinement of research methods, procedures, techniques and tools that form the body of research methodology. Example, developing an instrument to measure the stress level in people. The knowledge produced through pure research is sought in order to add to the existing body of knowledge of research methods. E.g. what is the specific genetic code of fruit fly?

Most of the research in the social sciences is **applied**. In other words, the research techniques, procedures and methods that form the body of research methodology are applied to the collection of information about various aspects of a situation, issue, problem or phenomenon so that information gathered can be used in other ways – such as for policy formulation, administration and the enhancement of understanding of a phenomenon. E.g. Improve agriculture crop production.

(B) **Explanatory research** attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon. In case of explanatory type of research, we are interested to know what causes which kind of effect. This brings in the topic of Principle of Cause and Effect relationship.

(C) **Exploratory research:** When a study is undertaken with the objective either to explore an area where little is known or to investigate the possibilities of undertaking a particular research study. It allows the researcher to familiarize him/herself with the problem or concept to be studied, and perhaps generate hypotheses to be tested. The results of exploratory research are not usually useful for decision-making by themselves, but can provide significant insight into a given situation.

(D) **Experimental research** is one in which the researcher makes changes in independent variables and studies their effects on dependent variables under controlled conditions. The variable which is supposed to be the cause of change is known as the independent variable and the variable that varies as a consequence of change is called the dependent variable. The independent variable is thought to come before the dependent variable in time.

Three essential components of experimental research are control, manipulation and measurement.

(E) **Descriptive research** describes what is? It involves the description, recording, analysis and interpretation of the present nature. As far as the composition or

process of phenomenon is concerned, the focus is on prevailing conditions or as how a person, group or thing behaves or functions in the present. It often involves some type of comparison or contrast.

Advantages:

- (i) Frequently it can be used as a check on laboratory findings in real life situations.
- (ii) It is amenable to the co-operative efforts of both layman and researcher.

Disadvantages: The disadvantages are:

- (i) It can be easily misused as it appears so simple on surface and hence often used wrongly by beginner researcher.

(F) Historical research is a critical evaluation and examination of past events, developments and experiences. Historical research depends upon observations which cannot be repeated in the same sense that a laboratory experiment or a descriptive survey. It also involves intensive library usage and vast scholar's patience.

Historical research has two uses:

- (i) It helps in understanding the roots of all modern theories
- (ii) It helps in establishing the genuineness of the sources of data.

The research suffers from two limitations.

- (i) The history never repeats itself. Therefore, findings arrived at by analyzing past events in a certain area cannot be applied to the present or the future because the conditions at two periods may have completely changed.
- (ii) The findings themselves may suffer from bias because in the absence of any methodological control the researcher may misinterpret the data in order to validate his hypothesis.

Main methods used in research: observational methods, case study methods and survey methods.

- **Observational Method:** Under this method, animal and human behavior are closely observed in natural or laboratory conditions which are also called naturalistic observation and laboratory observation, respectively. Naturalistic observation is having greater ecological validity than laboratory observation. Laboratory observations are usually under controlled conditions, less time-consuming and cheaper than naturalistic observations. However, both naturalistic and laboratory observations are important for the advancement of scientific knowledge.
- **Case Study Method:** Case study research involves an in-depth study of an individual or group of individuals. Case studies often lead to testable hypotheses and allow us to study rare phenomena. Case studies cannot be

used to determine cause and effect, and they have limited use for making accurate predictions.

- **Survey Method:** In survey method research, participants answer questions administered through interviews or questionnaires. After participants answer the questions, researchers describe the responses given. In order for the survey to be both reliable and valid it is important that the questions are constructed properly. Questions should be framed so they are clear and easy to comprehend. It is important for you to understand that descriptive research methods can only describe a set of observations or the data collected.

On a broader perspective all researches can be classified into two groups: Qualitative and Quantitative research

Qualitative research

- Qualitative research is research dealing with phenomena that are difficult or impossible to quantify mathematically, such as beliefs, meanings, attributes, and symbols.
- Qualitative researchers aim to gather an in-depth understanding of human behaviour and the reasons that govern such behaviour. The qualitative method investigates the why and how of decision making, not just what, where, when.

Advantages

- (i) It enables more complex aspects of a person's experience to be studied
- (ii) Fewer restriction or assumptions are placed on the data to be collected
- (iii) Not everything can be quantified, or quantified easily, Individuals can be studied in more depth
- (iv) Good for exploratory research and hypothesis generation
- (v) The participants are able to provide data in their own words and in their own way

Disadvantages

- (i) It is more difficult to determine the validity and reliability of linguistic data
- (ii) there is more subjectivity involved in analysing the data
- (iii) "Data overload" — open-ended questions can sometimes create lots of data, which can take along time to analyse
- (iv) Time consuming

Quantitative research

Quantitative research refers to the systematic empirical investigation of any phenomena via statistical, mathematical or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena

Quantitative research is generally made using scientific methods, which can include:

- ✓ The generation of models, theories and hypotheses
- ✓ The development of instruments and methods for measurement
- ✓ Experimental control and manipulation of variables
- ✓ Collection of empirical data
- ✓ Modelling and analysis of data
- ✓ Evaluation of results

Advantages

- (i) Quantitative research allows the researcher to measure and analyse data.
- (ii) The researcher is more objective about the findings of the research.
- (iii) Quantitative research can be used to test hypotheses in experiments because of its ability to measure data using statistics.

Disadvantages

- (i) The main disadvantage of quantitative research is the context of the study or experiment is ignored.
- (ii) Quantitative research does not study things in a natural setting or discuss the meaning things have for different people.
- (iii) A large sample of the population must be studied for more accurate results

Lecture 4

REVIEW OF LITERATURE

The literature review is an integral part of the entire research process and makes a valuable contribution to almost every operational step.

Literature review is a continuous process on the part of the researcher and it starts even before finalizing research problem. The literature review conveys to your reader the existing knowledge and ideas on your research topic, and the strengths and weaknesses of these texts / experiments / studies. You should clearly organise literature review in line with the focus of your research (your objectives, research question or argument).

Literature Review

The selection of available documents (both published and unpublished) on the topic which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed.

- Chris Hart

Functions of literature review

- 1) It provides a theoretical background to your study.
- 2) It reviews the means by which you establish the links between what you are proposing to examine and what has already been studied. In other words, it helps you to refine your research methodology.
- 3) Through the literature review you are able to show how findings have contributed to the existing body of knowledge in your profession.
- 4) It enables you to contextualize your findings.

Procedure for reviewing the literature

Four steps involved in conducting a literature review:

- 1) Search for existing literature in your area of study
 - 2) Review the literature selected
 - 3) Develop a theoretical framework
 - 4) Develop a conceptual framework
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- 1) Search for existing literature: To effectively search for literature in your field of enquiry, it is imperative that you have in mind at least some idea of the broad subject area and of the problem you wish to investigate, in order to set

parameters for your search. Next compile a bibliography for this broad area. There are two sources that you can use to prepare a bibliography :

- a. Books: the best way to search for a book is to look at your library catalogues. Publications such as Book Review Index can help you to locate books of interests.
 - b. Journals: there are several sources designed to make your search for journals easier and these can save your enormous time. They are
 - i. Indices of journals (e.g. Humanities index)
 - ii. Abstract of articles (e.g. ERIC)
 - iii. Citation indices (e.g. Social sciences citation index)
- 2) Review the literature selected: Now that you have identified several books and articles as useful, the next step is to start reading them critically to pull together themes and issues that are associated. Once you develop a rough framework, slot the findings from the material so far reviewed into that framework, using a separate sheet of paper for each theme of that framework. As you read further, go on slotting the information where it logically belongs under the themes so far developed.
- 3) Develop a theoretical framework: Literature pertinent to your study may deal with two types of information:
- a. Universal
 - b. More specific (i.e. local trends or a specific programme)

In writing about such information you should start with the general information, gradually narrowing it down to the specific.

- 4) Develop a conceptual framework: The conceptual framework stems from the theoretical framework and concentrates usually, on one section of that theoretical framework which becomes the basis of your study. The conceptual framework is the basis of your research problem.

Lecture 5

RESEARCH PROBLEM

The first and foremost stage in the research process is to select and properly define the research problem. A researcher should first identify a problem and formulate it, so as to make it amenable or susceptible to research. In general, a research problem refers to an unanswered question that a researcher might encounter in the context of either a theoretical or practical situation, which he/she would like to answer or find a solution to.

According to Kerlinger the problem is an interrogation of probing statement where in, it will answer the relationship between two more variables.

According to Hurlcok "A problem is an interrogative sentence or statement that asks what relation exists between two or more variables".

Research problem is a situation or circumstance that requires a solution to be described, explained, or predicted.

Why to define the research problem?

It determines

- ✓ what you will do
- ✓ will it withstand scientific scrutiny
- ✓ how you will do it and
- ✓ what you may achieve

Sources of research problems

Most research in the humanities revolves around four Ps:

- People
- Problems
- Programmes
- Phenomenon

The emphasis on a particular 'P' may vary from study to study but generally, in practice, most research studies are based upon at least a combination of two Ps. You may select a group of individuals (a group or community as such- 'people'), either to examine the existence of certain issues or problems relating to their lives, to ascertain attitude of a group of people towards an issue ('problem'), to establish existence of a regularity ('phenomenon') or to evaluate the effectiveness of an intervention ('programme').

Every research study has two aspects:

- 1) The study population
- 2) The subject area

The 'people' provide you with the 'study population', whereas the other three Ps furnish the 'subject areas'. Your study population- individuals, groups and communities- is the people from whom the information is collected. Your subject area is a 'problem', 'programme' or 'phenomenon' about which the information is collected.

Criteria in selection of a research problem

There are certain criteria to be followed in selection of a research problem. They are:

- (i) The problem should be timely. (e.g. soon after good rain, light traps are arranged to eradicate outbreak of red hairy caterpillar pest).
- (ii) The problem should relate to practical as well as theoretical situations. (e.g. green manuring *in situ* gives better yields).
- (iii) The problem should permit generalisations to the maximum extent possible. ((e.g. mass media creates awareness about farm technology in farmers).
- (iv) The problem should help in developing new techniques, concepts and measurements. (e.g. the problem of how to apply seed and fertilizers at a time gave rise to new devices, seed-cum-fertilizer drill).
- (v) The problem should allow to study the relationship of phenomenon. (e.g. study of nature, atmosphere, weather).
- (vi) Problem should express relationship between two or more variables. (e.g. the effect of rainfall and temperature on the yield of a crop).
- (vii) Problem should be stated clearly, unambiguous, implying possibility of empirical testing. (e.g. excess N leads to excess vegetative growth).

Factors for selection of a research problem

1. **Interest:** A research is usually time consuming, and involves hard work and possibly unforeseen problems. One should select topic of great interest to sustain the required motivation.
2. **Magnitude:** It is extremely important to select a topic that you can manage within the time and resources at your disposal. Narrow the topic to something so it becomes manageable, specific and clear.
3. **Measurement of concepts:** Make sure that you are clear about the indicators and measurement of concepts (if used) in your study.
4. **Level of expertise:** Make sure that you have adequate level of expertise for the task you are proposing since you need to do the work yourself.
5. **Relevance:** Ensure that your study adds to the existing body of knowledge, bridges current gaps and is useful in policy formulation.
6. **Availability of data:** Before finalizing the topic, make sure that data are available.

7. **Ethical issues:** How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem formulating stage.
8. **Overdone subject:** Subject which is overdone should not be chosen, for it will be difficult task to throw any new light in such a case.
9. **Controversial subject:** Should not become the choice of an average researcher.
10. **Too Narrow topic should be avoided**

Steps in the formulation of a research problem

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