UNIT 3 RESEARCH DESIGN

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Learning Objectives

After going through this unit, you will be able to:

➢ learn how research requires a strategy to be conducted well;
➢ know how to design the research;
➢ learn how to collect data through scientific and appropriate means;
➢ know the characteristics and types of research design; and
➢ learn evaluation of research.

3.1 INTRODUCTION

We begin the lesson with an introduction to the unit, where we talk about what research design entails. Research design is planning a strategy for conducting research. It plans to: what is to be observed, how is it to be observed, when/where is it to be observed, why is it to be observed, how to record observations, how to analyse/interpret observations, and how to generalise. Research design is, thus, a detailed plan of how the goals of research will be achieved. In fact, research design is the conceptual structure within which research is conducted; it constitutes the blueprint of the collection, measurement and analysis of data. Black and Champion (1976) have given three important functions of research design. They are:

a) It provides the blueprint for research.
b) It limits the boundaries of research activity.
c) It enables investigation to anticipate potential problems.
So we see that, research design is needed because it facilitates the smooth sailing of research operations thereby making research as efficient as possible yielding information with minimal expenditure of effort, time and money.

Ahuja (2007) explains that the research designing proceeds in eight phases as under:

1) **Stating the problem**, i.e., to show the type of research it will be, and to what extent will it contribute to the academics and understanding of society.

2) **Review of other studies**, i.e., going through the findings, hypotheses or theories developed by other scholars in one's own discipline or other disciplines.

3) **Operationalising concepts**, i.e., giving specific meanings to the terms used.

4) **Identifying variables of the study**, i.e., pointing out key variables (see BOX) in the study and methods of measurement.

5) **Fixing sample**, i.e., deciding the numbers of subjects from whom the data is to be collected and how these subjects are to be chosen.

6) **Specifying tools of study**, i.e., whether data are to be obtained through questionnaires, schedule, interview or observation. Whether it will be case study, survey study, field study or experimental study.

7) **Designing the kind of analysis**, i.e., whether quantitative or qualitative analysis for the study.

8) **Fixing time-schedule and budget**, i.e., how much time and budget is to be devoted to the study.

**BOX**

**Variables:** A variable is a characteristic that takes on two or more values. It is something that varies. It can be classified into two types: independent and dependent variables. An independent variable is the presumed cause of the dependent variable— the presumed effect. When we say, A causes B, it means A is the independent variable and B is the dependent variable. The independent variable, thus, is one which explains or accounts for variations in the dependent variable. A dependent variable is one which changes in relationship to changes in another variable. An independent variable is one whose change results in the change in another variable. In a controlled experiment, the independent variable is the experimental variable, i.e., one which is withheld from the control group.

**3.2 CHARACTERISTICS OF A GOOD RESEARCH DESIGN**

We need to learn how a research design can be well made. If a research design possesses qualities like being flexible, suitable, applicable, resourceful, reasonable etc., then it can be defined as a good research design. A good research design is one which decreases bias and increases dependability of the data collected and investigated. It also generates complete information and allows a chance to reflect on many different features.
A research design appropriate for a particular research problem, usually involves the consideration of the following factors:

1) The means of obtaining information;
2) The availability and skills of the researcher and his/her staff;
3) the objective of the problem to be studied;
4) The nature of the problem to be studied; and
5) The availability of time and money for the research work.

### 3.3 TYPES OF RESEARCH DESIGNS

In the sub-sections below, we elucidate the different types of research designs to comprehend the matter more clearly.

#### 3.3.1 Exploratory Research Design

Exploratory research studies are also known as formulative research studies. Such studies are needed to formulate a problem which helps in better investigation or helps in developing functional hypotheses. Such studies promote the discovery of notions and perceptions. Therefore the research design created in such a context had to be accommodating enough to allow the prospect to consider various features of a problem under investigation. Since as already discussed in Unit 1, a research problem changes from its general form at the initial stage to a more concrete form eventually, the research design has to be highly flexible. In such studies, the following three methods in relation to a research design are viewed. They are: (a) the survey of concerning literature; (b) the experience survey, and (c) the analysis of 'insight-stimulating' examples.

a) **The survey of relevant literature**: Literature review as discussed in Unit 1 helps in formulating a research problem and developing hypotheses. Hypotheses can either be reviewed from earlier works or their validity can be appraised for future research. The investigator also has to see if the present hypotheses can reveal a new hypothesis. Thus the researcher should evaluate and construct her/his hypotheses on earlier work done by others and if such a situation is not possible, then earlier published material is to be reviewed to build a new hypothesis from scratch.

It is in fact the bibliographical study which aids the researcher to formulate the problem accurately. It is essential for the researcher to use notions and theories built in various research settings to the thematic area s/he is working. Creative writing can also be looked into to devise hypotheses.

b) **The experience survey**: In exploratory studies it is also essential that those persons should be surveyed who have already done some work in the field under study. These people have the knowledge to guide and explain practical difficulties. These might be the persons who might be senior officials, social workers and professionals, having a lot of untapped material at their disposal on the one hand and opportunity of viewing the problem from different angles on the other. They also know policy implications of a problem. They have insight and are in close contact with the people of an area knowing their habits, limitations and also possess the methods of approaching them. The administrators have real advantage of viewing the
problem from close quarters and can definitely provide fruitful clues for solving many such problems which otherwise appear to be difficult. The specialist in their own turn have rich experience which can help the social scientists in gaining experience and knowing about influences operating in the situation which they are going to study. It is therefore, always desirable in an exploratory study that the specialists, professionals, administrators and researchers as well as officials should be surveyed before any hypothesis is formulated.

An important thing which ought to be kept in mind in this regard is that there are many people in every country who have rich and firsthand knowledge of a particular problem proposed to be studied, but their work may not available in a published form. These people are store houses of knowledge. It is essential and rathervery pertinent that such people be identified and a close liaison should be established with them so that this important source is not lost and fullest advantage of it is taken.

c) Analysis of ‘insight-stimulating’: Another rewarding method for preparing hypotheses for scientific enquiry or research is the analysis of ‘insight-stimulating’ examples. This is most suited in situations where there is little or no experience to assist as a guide. Selected instances of the problem in which the researcher is interested is rigourously studied. For this, exiting record if any are examined, unstructured interviews are conducted or other available approaches are used. The investigator’s assertiveness, the passion towards the study and the capacity of the researcher to bring together varied information into a single significant interpretation are the key features by which this method becomes an apt process to evoke discernment.

3.3.2 Descriptive/Diagnostic Research Design

Descriptive research studies are those studies which are interested in explaining the features of a particular individual, or of a group, while diagnostic research studies ascertain the frequency with which something comes up or its relationship with something else. The studies concerning whether certain variables are connected are examples of diagnostic research studies. As against this, studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situation are all examples of descriptive research studies. Most of the social research comes under this category. From the point of view of the research design, the descriptive as well as diagnostic studies share mutual needs and as such these two types of research studies may be clubbed together.

The research design should be created in such a way that it allows means for shielding against bias and should induce maximum reliability. There should also be enough concern for the efficient conclusion of the research study.

The design for such studies should be exact and thorough and not malleable. It should concentrate on the following:

a) Devising the objective of the study (what the study is about and why is it being devised?)

b) Designing the methods of the data collection (what techniques of accumulating information will be adopted?)
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c) Selecting the sample (how much material will be required?)
d) Collecting the data (where can the needed data be found and with what time period should the data be connected?)
e) Managing and evaluating the data.
f) Reporting the outcome.

In a descriptive and diagnostic investigation the first step that needs to be taken into consideration is to identify the objectives. This is to be done with adequate exactness so that the data collected are applicable. After this the methods for collecting the data are to be selected. Usually in descriptive and diagnostic studies the researcher first makes a sample study. Based on the analysis of the sample study s/he makes statements about the population. Such a sample obviously has to be designed as well.

A researcher has to accumulate the following qualities to collect authentic and useful data. S/he should be honest and should work without prejudice. Her/his level of dedication towards collecting data should be viewed in terms of completeness, comprehensibility, consistency and dependability.

3.3.3 Experimental Research Design

Experiments of the true kind in the field are not very popular in anthropology though they are employed in connected sciences like social psychology and organisational studies. It is also sometimes used by researchers in studying social policy to calculate the effect of new policies or new reforms.

The classical experimental design is also often referred to as the randomized experiment. Two groups are established and it is this that forms the experimental manipulation and therefore, the independent variable. The experimental group receives the experimental treatment but the control group does not receive any experimental treatment. Some experimental designs of this kind are:

a) **After-only experiment:** We carry out experiments of this kind under such social conditions which are not at all under the control of physical or natural conditions. There are two types of groups which are chosen for the study. The group in which experiment is carried is called the experiment group, whereas the other is called the control group. The control here is taken in the sense that extra influences are prevented or checked to the extent possible. The experiment is carried out with the help of some determined methods and the results are measured. Comparative study is made from the results of observation and the measurement of the two groups. The changes that are caused in the experimental groups are recognized and accepted as the results of the variable that are responsible for the changes. As already pointed in this type of experiment both these groups are similar to each other in all respects, which of course is not possible in some other research. Since the differences are bound to be there, therefore it is difficult to identify if such differences are basic to the group or due to the programme of experimentation. It is also usually difficult to find out, if the changes are due to experiment or some external factors and these have become major difficulties of this type of experimentation, which becomes increasingly difficult to solve.
b) **Before-after experiment:** In this type of experimental research design certain groups are selected and before any experiment is actually carried out observations are made about these groups. Observations are also made after the experiment has been carried out and differences are observed. It is then believed that differences between the two are on account of implementation of the programme. In this type of experimentation, it is not necessary that both the groups must be made either equivalent or similar.

It is however, in the interest of the experimentation that the dependent variables should be measured for matching the cases in experimental and controlled groups. It will then be possible to know that after experimentation what the incidence of change in the dependent variables is and to evaluate the effects of experimental or independent variables. In this study, one group may be used before measure, serving as a control but though before measure control group may be one yet after measure experiment may be on a different group which is assumed to be an equivalent group. Before and after measures may be taken both on experimental group and on one control group. In this type of experimentation there might be the involvement of two or more groups. Such experimentation can be with single group, with one control group, with two controlled groups, or even with three groups.

One great difficulty of this system is, groups are studied under two situations namely before experimentation and after experimentation but it does not take into consideration external factors which might influence the study in between these periods of experimentation.

c) **Ex-post facto experiment:** In anthropological research, there are many problems which can be studied only with the help of adequate historical background e.g. why revolutions take place in a particular country and the conditions for another revolution being ripe in that or in any other country etc. The researcher will have to depend at the past experience because it will be difficult for him to organise another revolution for his study and dependence on historical background can be possible only on the basis of ex-post facto experiment.

In this type of experiment, the researcher is required to select two or more groups for his study. Out of these two groups in one group the event has already taken place and the other is free from the happening of that event e.g. the investigator can pick up for his study two states, which are similar in nature and also similar in almost all other respects. But in spite of this, in one country revolution has already taken place, while in the other revolution has not taken place. With this study he can find out why at all, revolution took place in one and did not take place in another country. In this way an investigator proceeds from the present to the past and can also look to the future influence if any. One can also find out and establish that present is the result of the past.

### 3.3.4 Quasi-Experimental Research Design

This is a study which possesses certain characteristics of the experimental design but do not include most of the internal validity necessities. However many writers have emphasised about the use of this quasi-experimental design. For example, a number of quasi-experiments have been recognised by Cook and Campbell (1979). Mention may be made of a quasi-experiment which is
designated as a natural experiment. These experiments are conducted in such a way that a social setting is manipulated in a way that the alteration that occurs if any, seem as if it is a natural change taking place in the social organisation. In such an experiment random assignment of subjects to experimental and control group is not possible. This absence of random assignment creates doubts about the validity of such experiments. But since the results of such natural interventions in social life are not artificial, the studies are still viewed to be persuasive. Being natural, their ecological validity also is quite strong. Though many writers discredit the usability of natural experiments as there is no control group or occasion for comparison, but sometimes a single group natural experiment does turn out to be significantly outstanding. Thus experimental designs including quasi experimental designs have been especially noticeable in evaluation research enquiries.

3.3.5 Cross-sectional Research Design

When data is collected on more than one case simultaneously, i.e., at the same point of time, it is said to involve a cross-sectional design. This is used to collect a body of quantitative and quantifiable data with two or more variables. They are then scrutinized to identify connectivity patterns.

Researchers who employ a cross-sectional design are concerned with variation or differentiation. This might in relation to people, organisations, families, nations, states etc. It is only when more than one case is examined can we get variation. Usually it is found than more than two cases are studied to understand variation. This is done as more the cases, more variation is to be seen; distinction between cases, easier to make etc.

Since simultaneous data is collected in cross-sectional research design in order to built maximum variables, the problem of ambiguity about the direction of causal influence is faced. Even when a researcher finds a relationship between two variables, s/he is still not sure whether they exhibit a causal relationship as the features of an experimental design are absent. At most in many cases the variables seem related. Having said this, it is not always necessary that a causal inference would not be present in a cross-sectional research design.

3.3.6 The Longitudinal Research Design

A distinct type of research design is the longitudinal research design. In this design, the time and cost involved is quite high. Due to this reason, it is a comparatively less-used design in social research. It can be called an extension of survey research as it includes the self-completion questionnaire or structured interview styled within the context of a cross-sectional research design. However the longitudinal research design is different from a cross-sectional research design in terms of reliability, replication and validity. But as the longitudinal research design gives some awareness into the time order of variables, thus it is able to permit causal inferences to be made.

In this type of research design a sample is surveyed and is surveyed again on at least one more occasion. It is common to distinguish two types of longitudinal design: the panel study and the cohort study. In the panel study, a sample, often a randomly selected national one is the focus of data collection on at least two (and often more) occasions. Data may be collected from different types of cases within a panel study framework like, people, households, organisations, schools, and so on.
The cohort study selects either an entire cohort of people or a randomly selected sample of them as the focus of data collection. The cohort is made up of people who share certain characteristics, such as all being born in the same week or having certain experiences, such as being unemployed or getting married on a certain day or in the same week. Panel and cohort studies share similar features. They are both concerned with illuminating social change and improving the understanding of causal influences over time.

Panel and cohort designs differ in important respects too. A panel study that takes place over many years can distinguish between age effects (the impact of the ageing process on individuals) and cohort effects (effects due to being born at a similar time), because its members will have been born at different times. A cohort study, however, can only distinguish ageing effects, since all members of the sample will be born at more or less the same time. Also, a panel study, especially one that operates at the household level, needs rules to inform how to handle new entrants to households (for example, as a result of marriage break-up or children leaving home).

3.3.7 Case Study Design

The case study design involves the comprehensive and severe examination of a single case. Such a case is studied within a community or an organisation. Therefore the stress is on the complete concentration of the setting through the case. It is a fact that the case study design is associated with qualitative methods like unstructured interviews and participant observation. These methods are definitely beneficial in the creation of a rigorous and meticulous analysis of a case. Yin (1984) identifies three kinds of cases:

- **The critical case**: the researcher is ready with a clearly defined hypothesis to study such a case. Such a study gives a better perception of the conditions in which the hypothesis may or may not hold.

- **The unique case**: The unique case is, as Yin observes, a common focus in clinical studies. Margaret Mead’s (1928) well-known study, *Coming of Age in Samoa* seems to have been motivated by her belief that the country represented a unique case. She argued that, unlike most other societies, Somoan youth do not suffer a period of anxiety and stress in adolescence. The factors associated with this relatively trouble-free period in their lives were of interest to her, since they might contain lessons for the Western youth.

- **The revelatory case**: The basis for the revelatory case exists ‘when an investigator has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation’ (Yin, 1984: 44).

Many case studies take place on what might be called the exemplifying case; cases are often chosen not because they are extreme or unusual in some way but because they will provide a suitable context for certain research questions to be answered. As such, they allow the researcher to examine key social process.

3.3.8 Comparative Research Design

It is worth distinguishing one further kind of design i.e., the comparative design. This design entails the study using more or less identical methods of two contrasting cases. It embodies the logic of comparison in that it implies that we can understand social phenomena better when they are compared in relation to two or more meaningfully contrasting cases or situations. The comparative
design may be realised in the context of either quantitative or qualitative research.

Cross-cultural research also entails its share of problems. They are usually the: management and arrangement of funds; evidence to be comparable keeping in view data-collection methods while using existing data, like official statistics or survey data for secondary analysis; warranting that the use of data-collection instruments (like interview schedules) in the collection of new information should not weaken real comparability; making sure that the samples of participants or institutions are corresponding. However further problems arise with the last point, when national and cultural contexts are depicted insensitively.

The comparative study is much similar to cross-sectional research design as both have to be reliable, valid, replicable and general. Two or more cross-sectional research studies can also be viewed as a comparative study. This too is carried almost at the same point of time.

Thus the comparative design can be viewed as a hybrid in both qualitative and quantitative study, where in the first one it is an extension of a case study design and in the latter it is an extension of a cross-sectional design. It also contains particular characteristics which are similar to experiment and quasi-experiment designs, as they too depend on the capability to duplicate a comparison.

**Activity**

Select any two type of research design and write a comparative note of the two.

### 3.4 EVALUATION RESEARCH

We now try to learn how evaluation research is executed. Evaluation research consists of the application of social research methods for the purpose of assessing social intervention programmes and policies. Evaluation researchers apply the same repertoire of methods as basic researchers do to address the same fundamental issues— the issues of research design, internal validity, measurement, and external validity. What differentiates evaluation research from basic social research is the social context in which the methods are applied. Evaluation is the crucial phase in the process of rational decision making or problem solving. First a problem is identified; second, options for its solution are considered; third, one or more options is implemented; fourth, the implemented options are evaluated; and finally, a decision is made about whether the options is worth adopting. As the term is used in social research, however, evaluation research usually pertains to the analysis of social programmes instituted by federal, state, and local Governments to help solve social problems. Evaluation studies have been used to investigate literally thousands of problems and intervention strategies (Singleton and Straits, 2005).

Evaluation research, as its name implies, is concerned with the evaluation of such occurrences as social and organisational programmes or interventions. The essential question that is typically asked by such studies is: has the intervention (e.g. a new policy initiative or an organisational change) achieved its anticipated goals? A typical design may have one group that is exposed to
the treatment, that is the new initiative, and a control group that is not. Since it is often not feasible or ethical to randomly assign research participants to the two groups, such studies are usually quasi-experimental. The use of the principles of experimental design is fairly entrenched in evaluation research, but other approaches have emerged in recent years. Approaches to evaluation based on qualitative research have emerged. While there are differences of opinion about how qualitative evaluation should be carried out, the different views typically coalesce around a recognition of the importance of an in-depth understanding of the context in which an intervention occurs and the diverse viewpoints of the stakeholders (Greene 1994, 2000).

There are many different types of evaluations depending on the purpose of evaluation. Perhaps the most important basic distinction in evaluation types is between formative and summative evaluation. Formative evaluations strengthen or improve the research being carried out, while summative evaluations, in contrast, examine the effects or outcomes of some research.

Formative evaluation involves quite a few evaluation categories. They are:

- **Needs assessment:** This decides who requires the research, how big the requirement is, and what might work to meet the requirement.

- **Evaluability assessment:** This determines whether an evaluation is viable and how investors can contribute to design its utility.

- **Structured conceptualization:** This helps stakeholders describe the programme or technology, the target population, and the potential results.

- **Implementation evaluation:** This supervises the reliability of the research.

- **Process evaluation:** This examines the procedures of producing the programme or technology, including alternative delivery processes.

Summative evaluation is further subdivided into:

- **Outcome evaluations:** This researches whether the programme or technology can cause verifiable effects on particularly distinctive target consequences.

- **Impact evaluation:** This is wider and evaluates the complete effects which are intended or unintended of the programme or technology as a whole.

- **Cost-effectiveness and cost-benefit analysis:** These address queries related to efficacy by regulating results in terms of their costs and values.

- **Secondary analysis:** This reappraises prevailing data to tackle new questions or to use methods not used earlier.

- **Meta-analysis:** This combines the outcome approximates from various enquiries to reach at an overall or concise conclusion on an evaluation query.

The selection of the problem, thus, is to be evaluated on the following bases:

- Is the topic worth investigating, i.e., will it benefit the researcher/consumer?

- Has it any academic/professional/practical importance?

- Is data collection/reliable information possible from respondents?
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- Is it feasible in terms of time/money?
- Will it enable to develop hypotheses or a theory?

Hillway has maintained that criteria for the selection of a problem should be: (1) is the problem significant? (2) Has it any value for undertaking research? (3) Is it too broad in scope? (4) Is data collection feasible? (5) Has it already been studied? If yes, with what results, i.e., is the problem original or not? (cf. Manheim, 1977)

Manheim (1977:113-117) has explained the evaluation of a research problem on following bases:

- Is the topic worthwhile? (i) How will it benefit consumer/researcher/participant in terms of money/time/energy spent? (ii) What will be its academic/professional/practical worth? e.g., voluntary retirement scheme for industrial workers of government employees.
- Is it feasible? (i) Is sufficient time available? (ii) Is budget adequate? (iii) Will respondents give required information? (iv) Will information be reliable? (v) Will investigators be objective? (vi) Can the findings of a small sample be warranted for broader generalization? (vii) Will the study encounter opposition from any source?
- Will any personal factors affect the research? In short, the important factors that affect the selection of the topic are: researcher's interest, research questions and objectives, research model, research values, unit(s) of analysis and time- schedule. Regardless of whether the researcher writes the literature into a qualitative, quantitative, or a mixed methods study, several steps are useful in conducting a literature review.

3.5 SUMMARY

There are several research designs and the researcher must decide in advance for the collection and analysis of data as to which design would prove to be more appropriate for her/his research. S/he must give due importance to various points such as the type of universe and its nature, the objective of her/his study, the resource list or the sampling frame, desired standard of accuracy and the like when taking a decision in respect of the design for her/his research. From the lesson above a learner can elucidate that there are different kinds of research designs which make research possible and feasible. In anthropology a researcher creates and uses these designs according to the need of her/his enquiry. The research design assists the investigation in being pragmatic and scientific.

References


**Suggested Reading**


**Sample Questions**

1) What are the characteristic of a good research design?

2) Discuss the types of research design in detail with examples.

3) Write an exhaustive note on evaluation research.