PG JMC S4-01 (DSC)

TWO YEAR MASTER'S DEGREE COURSE
(CBCS in Accordance with NEP 2020)

SEMESTER IV

COMMUNICATION RESEARCH

JOURNALISM AND MASS COMMUNICATION

Bhupen Hazarika School of Mass Communication

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

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COURSE INTRODUCTION

In this Masters Programme of Mass Communication we have discussed various aspects of mass communication such as communication theories, advertising, public relations, journalism etc so far in your previous courses in this programme. In this course we are going to discuss the various aspects of communication research. Reseach is an integral part of any area of study. It helps in coming to a conclusion of a problem after a careful and systematic study. This Course would introduce you to the basic concepts of research and provide an overview of research in the field of communication, along with providing knowledge on almost every important aspects related to communication research.

While going through this block you will come across some boxes which are put on the left side or right side of the text. These boxes will provide the meanings of some words and concepts cited within the text. Apart from this, there will be some broad and short questions included under Activity and Check Your Progress in every unit. Activities will increase our thinking capacity because questions put in Activity are not directly derived from the text. But answers to the short questions are provided in the section. Answers to Check Your Progress. Besides, there are some text-related questions which are put in Model Questions. These questions will help you in selecting and mastering probable topics for the examination so that you can prepare for the examination with confidence.

COMMUNICATION RESEARCH
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UNIT 1: INTRODUCTION TO RESEARCH

UNIT STRUCTURE

1.1 Learning objectives

1.2 Introduction

1.3 Meaning of research

1.4 Definition of research

1.5 Objectives of research

1.6 Importance of research

1.7 Let us sum up

1.8 Further reading

1.9 Answers to check your progress

1.10 Model Questions

1.1 LEARNING OBJECTIVES

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

- define the term research.
- explain the objectives of research.
- discuss the importance of research.

1.2 INTRODUCTION

In this course on 'Communication Research' we are going to discuss the various aspects of communication 'research' and other related concepts.

In this first unit we will concentrate on the meaning, definition and importance of research. Basically, research is an act of scientific investigation. This unit provides you with a basic idea on research and its importance.

In the next unit, you will be acquainted with various types of research. Quantitative and qualitative researches and the differences between them will also be enumerated in the unit in detail. After that the unit will deal with the different research methods, such as survey method, case study method,

experimental method, historical methods etc. Finally, we will have a discussion on the research process step by step.

1.3 MEANING OF RESEARCH

The word 'research' stands for re-search. It refers to a search for knowledge. But here we should remember that it must be a scientific and systematic search for pertinent information on a specific topic.

In this age of challenges and competition, research has assume much importance greater for all fields, be it the business world or the corporate world or the communication world. Research has now become an integral part of all the areas of the human activities. It has however occupied the realm of human understanding in some form or other from times immemorial. The thirst for new areas of knowledge and the human urge for solutions to the problems have developed a faculty for search and research.

As we have mentioned earlier, research is an act of scientific investigation. The Advanced Learner's Dictionary of current English lays down the meaning of research as "a careful investigation or inquiry specially through search for new facts in any branch of knowledge." The Random House Dictionary of the English language defines the term research as a diligent, a systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications etc. According to the meaning as laid down in this dictionary, research involves the acquisition of knowledge. Research means search for truth. Truth means the quality of being in agreement with reality or facts. It also means an established or verified fact. To do research is to get nearer to truth to understand the reality. It is the pursuit of truth with the help of study, observation, comparison and experimentation. In other words, the search for knowledge through objective and systematic method of finding solution to a problem or answer to a question is research. There is no guarantee that the researcher will always come out with a solution or answer. We can mention here a statement of Karl Pearson. He says "there is no shortcut to truth……..no way to gain

knowledge of the universe except through the gateway of scientific method".

According to Pearson, research is a scientific method. Now the question arises as to what we mean by the term 'science'. The development of science can be considered a constant interplay between theory and fact. The word 'science' has been derived from the Latin word "scientia" which means knowledge. As we have discussed earlier, research involves acquisition of knowledge Thus, science and research are related and go hand in hand. Science is popularly defined as an accumulation of systematic knowledge; or, we can say, the systematized knowledge about things or events in nature is called science. Here we have seen that the words systematic and knowledge are very important. Knowledge refers to the goals of science, while systematic refers to the method that is used to reach that goal. So, scientific method means the systematic method and research is always based on the systematic method.



CHECK YOUR PROGRESS

Q.1: What do you mean by research?

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Q.2: What is science?

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Q.3: What do you mean by scientific investigation?

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1.4 DEFINITION OF RESEARCH

Some people consider that research is a movement, a movement from the known to the unknown. It is a voyage of discovery. We all possess the vital instinct of inquisitiveness because when the unknown confronts

us, we all wonder at it and our inquisitiveness makes us probe by to attain full and fuller understanding of the unknown. C.R. Kothari in his book, *Research Methodology,* defines that this inquisitiveness is the mother of all knowledge and the method, which men employ for obtaining the knowledge of whatever the unknown can be, is termed as research. Research is an academic activity and, as such, the term should be used in a technical sense.

Research is an organized and systematic way of finding answers to questions. In this definition we have found that research is an organized and systematic method. Systematic because there is a definite set and procedures and steps which we will follow. There are certain things in the research process which are always done in order to get the most accurate results. Organized in that, there is a structure or method in going about, doing research. It is a planned procedure, not a spontaneous one. It is focused in a limited way, a specific scope. Finding answers is the end of all research. Whether it is the answer to a hypothesis or even a simple question, research is successful when we find answers. Sometimes the answers is 'No', but it is still an answer. Questions are central to research. If there is no question, then the answer is of no use. Research is focused on the relevant, useful and important questions. Without a question, research has no focus, drive or purpose.

Let us discuss some definitions of research:

L.V. Redman and A.V.H. Mory in their book "The Romance of Research" have defined research as "a systematized effort to gain new knowledge".

"Research is a scientific and systematic search for pertinent information on a specific topic" (C.R. Kothari; 'Research Methodology – Methods and Techniques').

"A careful investigation or inquiry specially through search for new facts in any branch of knowledge" (Advanced Learners' Dictionary of Current English).

Research refers to a process of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the same and reaching

certain conclusions either in the form of solution to the problem enunciated or in certain generalizations for some theoretical formulation.

- D. Slesinger and M. Stephenson in the 'Encyclopedia of social Sciences' have defined research as- "manipulation of things, concepts or symbols for the purpose of generalizing and to extend, correct or verify knowledge, whether that knowledge aids in the construction of theory or in the practice of an art".
- According to Clifford Woody, Research comprises defining and redefining problems, formally to hypothesis or suggested solutions, collecting, organizing and evaluating data! making deductions and researching conclusion! and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

From the above definitions we can say that research is an original contribution to the existing stock of knowledge making for its advancement. It is the search for a new knowledge through objective and systematic method of finding solution to a problem.



CHECK YOUR PROGRESS

Q.4: Give a suitable definition of research.

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Q.5: Who wrote the book "The Romance of Research"?

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1.5 OBJECTIVES OF RESEARCH

Already we have discussed in the above sections that the main objective of research is re-search of existing knowledge. Research is thus mainly to discover answers to questions through the application of scientific and systematic methods. The prime objective is to find out the truth which

is hidden and which has not been discovered yet. In his book, 'Research Methodology', C.R. Kothari has given some objectives of research. These are:

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or *formulative research studies*);
2. To portray accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as *descriptive research studies*);
3. To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as *diagnostic research studies*);
4. To test a hypothesis of a casual relationship between variables (such studies are know as *hypothesis testing research studies*).

1.6 IMPORTANCE OF RESEARCH

In the previous Section we have discussed the various objectives of research. Research is an academic activity. Without this activity we can not find out the truth which is hidden and which has not been discovered. Research has became an integral part of all the areas of human activity. It is an endeavour to discover answers to the problems of intellectual and practical nature through the application of scientific and systematic approach. Research is important in all fields of academic discipline.

Today we live in a world of science and technology. The news papers at the doorstep, all important news from each and every corners of the world in the television box; news, message, background and details in the WebPages; telephonic conversion through mobile phones etc. are the results of research and scientific innovation. Research is important not only for the advancement of the science and technology in present day world, but also in all aspects of business, economics, government policies, operational and planning problems, social relationships, international relations etc.

'All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry and inquiry leads to innovation' (Hudson Maxim) – This maximum can make you understand the significance and importance of research.

The increasingly complex nature of trade, business and government has focused attention on the use of research in solving operational problems. As an aid to economic policy, research has gained added importance, both for the public and the private sectors. Decision making may not be the part of research, but it certainly facilitates the decisions of the policy makers. On the other context, we know that research in social sciences is concerned with knowledge for its own sake and with and also for what it can contribute to public policy. Research provides an intellectual satisfaction of knowing a few things just for the sake of knowledge and simultaneously it has practical utility for the social scientists to use that something better or in a more efficient manner knowledge for doing something.

Not only in the pure science and the disciplines of the social sciences, research became a phenomenon that affects each and every sphere of the functioning of mass media all over the globe. Issues and activities under mass communication research encompass a wide range including determining the topics to be covered in the print medium, television, radio, effectiveness of certain programmes among the audiences and the viewers, success of advertising campaign or public relations activities etc. The influence of research also covers far beyond the mass communication tools to embrace every section of the society. We cannot ignore the importance of communication research in the present day context.



CHECK YOUR PROGRESS

Q.6: Fill in the blanks—

a. Research is an.....activity.

b. Television, Internet, mobile phone etc. are the results of the research and.....

c..... may not be part of research, but it certainly facilitates the decisions of the policy makers.



1.7 LET US SUM UP

- Research has became an integral part of all the areas of human activities. It is an endeavour to discover answers to the problems of intellectual and practical nature through the application of scientific and systematic approach. Research is important in all fields of academic discipline.
- The word research stands for re-search. It refers to a search for knowledge. Research refers to a process of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the same and reaching certain conclusions either in the form of solution to the problem enunciated or in certain generalizations for some theoretical formulation.



1.8 FURTHER READING

1. *Research Methodology* by C.R. Kothari, New Age International Publishers, New Delhi
2. *Research Methodology, Techniques and Trends* by V. V. Khanzode, A P H Publishing Corporation, New Delhi



1.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Research refers to a search for knowledge. It is a systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications etc.

Ans. to Q. No. 2: In its broadest sense, science refers to any systematic knowledge-base or prescriptive practice which is capable of resulting in a prediction or predictable type of outcome.

Ans. to Q. No. 3: Scientific investigation refers to bodies of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge.

Ans. to Q. No. 4: Research refers to a process of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the same and reaching certain conclusions either in the form of solution to the problem enunciated or in certain generalizations for some theoretical formulation.

Ans. to Q. No. 5: L.V. Redman and A.V.H. Mory wrote the book "The Roman of Research".

Ans. to Q. No. 6: Fill in the blanks—

a. Research is an academic activity.

b. Television, Internet, mobile phone etc. are the results of the research and scientific innovation.

c. Decision making may not be part of research, but it certainly facilitates the decisions of the policy makers.



1.10 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q.1: Waht are the objectives of Research?

Q.2: Write a short note on the inportance of Research

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: What do you mean by research? Discuss some of definitions of research.

Q. 2: 'Research means re-search' – Explain.

Q. 3: What do you mean by science? What is scientific investigation?

Q. 4: Elucidate the importance of research in mass media.

*** ***** ***

UNIT 2: TYPES OF RESEARCH

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 Various Types of Research

- 2.3.1 Descriptive versus analytical
- 2.3.2 Applied research and fundamental research
- 2.3.3 Quantitative and Qualitative Research
- 2.3.4 Conceptual and Empirical Research
- 2.3.5 Some Other Types of Research

2.4 Quantitative and Qualitative Research

- 2.4.1 Quantitative Research
- 2.4.2 Qualitative Research
- 2.4.3 Differences between quantitative and qualitative research

2.5 Research Methods

2.6 Research Process

2.7 Let us Sum Up

2.8 Further Reading

2.9 Answer Check Your Progress

2.10 Model Questions

2.1 LEARNING OBJECTIVES

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

- discuss the various types of research
- define Quantitative and Qualitative Research
- analyse research methods
- explain research process

2.2 INTRODUCTION

Research is an art of scientific investigation. In the earlier unit we have discussed on the meaning, definition and importance of research. That unit has provided you with a basic idea on research and its importance. This unit describes the various types of research. Quantitative and qualitative researches and the differences among them are also enumerated in the unit in detail. After that the unit deals with the research methods, such as survey method, case study method, experimental method, historical methods etc. Finally, in this unit we will discuss the topic on research process step by step.

The next unit will introduce the meaning, definition and various aspects of Communication Research. The unit will also discuss the importance of communication research and mass media research. Elements of communication research will also be enumerated in unit - 3.

2.3 VARIOUS TYPES OF RESEARCH

In the first unit of this block we have discussed the meaning and definition of research. Now let us discuss the types of research –

2.3.1 Descriptive versus analytical

Descriptive research includes surveys and fact finding enquiries of different types. The main objective of this type of research is to describe the state of affairs as it exists at present. In social sciences research we use the term “ex-post facto research” for descriptive research study. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is going on. In this type of research, all kinds of survey method are utilized including comparative and co-relational method. On the other hand, the researcher has to use facts and information which are available and after collecting these data the researcher can analyse and make a critical evaluation on the materials in the method of analytical research.

2.3.2 Applied research and fundamental research

A research can either be an applied research or a fundamental one. Applied research is based on action and the main objective of this research is to find a solution for an immediate problem facing the society, media industry or business organization.

On the other hand, fundamental research is mainly concerned with generalization and with the formulation of a theory. Pauline V. Young in his book "Scientific Social Survey and Research" defines that "gathering knowledge for knowledge's sake is termed 'pure' and 'basic' research."

As discussed above, applied research aims at certain conclusion or solution of a concrete social or business problem. On the contrary, a research study on the human behaviors and media behaviour is a fundamental research.

2.3.3 Quantitative and Qualitative Research

These two types of researches are the most important types not only for the social science research but also for some related disciplines like mass media, journalism etc. These two types are also used in the research of the natural sciences.

The main objective of the quantitative research is to develop and employ mathematical models, theories and hypothesis pertaining to natural phenomena relating to or involving quality or kind. We will discuss these types of researches in the next section in detail as these are the main researches used in the communication discipline.

2.3.4 Conceptual and Empirical Research

C. R. Kothari defines that conceptual research is the one which is related to some abstract idea (s) or theory. It is generally used by the philosophers and thinkers to develop new concepts or to reinterpret the existing one. On the contrary, empirical research relies on experience or observation alone, often without due regard for

system and theory. It is a data-based research, coming up with conclusion which is capable of being verified by observation or experiment. We can also call it the experimental type of research. It is an appropriate method, when proof is sought that certain variables affect other variables in some way.

2.3.5 Some Other Types of Research

By now, we have discussed eight important types of research. Besides these, there are so many other types of researches, which are also important for the communication research or in the social sciences. The above stated approaches are based on either the purpose of research, or the time required to accomplish research, on the environment in which the research is done, or in the basis of some other similar factors.

From the point of view of time, the research can be one time research or may be a longitudinal research.

From the point of view of the place, where the research is done, we can categorize the approaches into two – field setting research or laboratory research or simulation research. Research can as well be understood as clinical or diagnostic research. This research generally follows the case study method or in depth approaches to reach the basic casual relations. Again, we can say that a research may be formalized. The first category is based on the development of the hypothesis only and the second one is based on the structure and where the hypothesis to be tested.

Historical research is also an important approach, which utilizes historical sources like documents, remains etc. to study events or ideas of the past, including the philosophy of persons or groups at any remote point of time.

Research can also be categorized as conclusion oriented and decision oriented. In the first one, the researchers are free to pick up a problem, redesign and enquire as he proceeds and is prepared to conceptualize as he wishes. On the other hand, the decision

oriented research is always for the need of a decision maker and the researcher in this case is not free to embark upon a research according to his own indication.



CHECK YOUR PROGRESS

Q.1: What do you mean by empirical research?

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Q.2: What is the main aim of the applied research?

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Q.3: What dose the descriptive research include?

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Q.4: Define historical research.

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2.4 QUANTITATIVE AND QUALITATIVE RESEARCH

In the earlier section, we have mentioned quantitative and qualitative research while discussing the various types of research. In this section we are going to discuss these two types more elaborately.

2.4.1 Quantitative Research

As we know that quantitative research is based on the measurement of quantity or amount. It is applicable to the phenomena that can be expressed in terms of quantity. So we can define that quantitative research is the systematic scientific

investigation of quantitative properties and phenomena with their relationships. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationship.

Wikipedia Encyclopedia describes that quantitative research is generally made by using scientific methods which include-

- The generation of models, theories and hypothesis.
- The development of instruments and methods for measurement.
- Experimental control and manipulation of variables.
- Collection of empirical data.
- Evaluation of results.

Quantitative research is contrasted with the qualitative research in the social sciences. Because in the social science research or in the communication research, some important variables can not be measured with the help of quantitative methods or mathematical models. For example, the examination, analysis and interpretation of observations for the purpose of discovering delaying meaning and patterns of relationships, including classification of types of phenomena and entities, in a manner that does not involve the quantitative method.

Basically it is often an interactive research process whereby evidence is evolves, theories and hypotheses are refined, technical advances are made and so on. It is widely used in the natural sciences rather than in social sciences. The quantitative methods are research techniques that are used to gather quantitative disinformation dealing with numbers and anything that is measurable. Statistics, tables and graphs are often used to present the results of these methods. They are therefore to be distinguished from qualitative methods. By now it must be clear about the quantitative research. Let us discuss what qualitative research means.

2.4.2 Qualitative Research

Qualitative research is one of the oldest forms of social science research. But in the 1950's and 1960's quantitative research gained popularity among the researchers. However, in the 1970's the qualitative research again came into the platform and became popular among the researchers. In the last three decades the publishers and editors of the research journals have been laying more stress on the qualitative research.

As we have mentioned, qualitative research is concerned with the qualitative phenomenon, i.e. phenomena relating to or involving quality or kind. Qualitative researchers aim to gather an in-depth understanding of human behaviour and the reason that govern such behaviour. While discussing on the investigation of human behaviour we can use the times "motivation research", which is an important type of qualitative research. This type of research aims at discovering the under lying motives and desires, using in depth indicators for the purpose. Quantitative research is especially important in the behavioural sciences where the aim is to discover the underlying motives of human behaviour. Through such research we can analyze the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing.

It is also useful in policy and evaluation research, where an understanding of why and how certain outcomes were achieved is as important as establishing what those outcomes were. Qualitative research is also useful in programme implementation and in the communication behavioural analysis.

2.4.3 Differences between quantitative and qualitative research

In the above subsections we have discussed that quantitative research is based on the measurement of quantity or amount. On the other hand, the term qualitative research is most often used in

the social sciences. Quantitative research differs from qualitative research in many ways. Quantitative methods are useful for describing social phenomena especially on a larger scale. Qualitative methods allow social scientists to provide richer explanations and description on social phenomena frequently on smaller scale.

Qualitative methods can be used in order to develop quantitative tools. But qualitative methods can be used to explore and facilitate the interpretation of relationship between variables.

Cases are chosen based on the way they typify or do not typify certain characteristic or participate in a class. In both the researches data analysis differs considerably. Researcher must carefully code the data in a consistent and relative way.

In the last, we can summarize that qualitative research is basically exploratory - means hypothesis generating. On the contrary, quantitative research is more focused and aims to test hypothesis. Qualitative research speaks to content validity. But quantitative data are of the kind that may lead to measurement or other kinds of analysis involving applied mathematics**.**



CHECK YOUR PROGRESS

Q.5: What is the main difference between quantitative and qualitative research?

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Q.6: Fill in the blanks-

1..... research is one of the oldest forms of social science research.

2..... research is the systematic scientific investigation of quantitative properties and phenomena with their relationships.

3.In the both researches ..... differs considerately.

2.5 RESEARCH METHODS

To conduct a research we have to follow some specific methods. Research method may be understood as all those methods or techniques that are used for the conduct of a research. The researcher has to provide answer at the end to the research questions raised in the beginning of the study. For this purpose the researcher has to investigate and gather the relevant data and information as a basis or evidence. The procedures adopted for obtaining the same are described in the literature as methods of research. Research methods or techniques, thus, refer to the methods the researchers use in performing research operations. We can also define the term as all those methods which are used by the researcher during the course of studying his research problem in a systematic and scientific manner. Research methods can be put into the following three groups :

(i) In the first group we include those methods which are concerned with the collection of data.

(ii) The second group consists of those statistical techniques which are used for establishing relationships between the data and the unknowns.

(iii) The third group consists of those methods which are used to evaluate the accuracy of the results obtained.

Let us discuss some important research methods which are used for collection of data:-

1. **Survey method**: Survey is a very popular branch of social science research. It can be defined as “specification of procedures for gathering information about a larger number of people by collecting information from a few of them”. (Black and champion)

2. **Observation methods**: It means seeing or viewing. It is not a casual but systematic viewing. It may be defined as “a systematic viewing of a specific phenomenon in its proper setting for the purpose of gathering information for the specific study”. It is a method of scientific enquiry.

3. **Case method**: It is borrowed from medical sciences. Just like a patient, the case is intensively studied, so, as to diagnose and then prescribe a remedy. According to PV Young, "a comprehensive study of a social unit, be that unit a person, a group, a social institution, a district, (a media organization) or community, is called a case study". It is one of the popular research methods in social sciences.

4. **Experimental method**: Experimentation is the basic tool of pure and physical sciences. However, it is now also used in social sciences. Experimentation is a research process used to observing the cause and effect relationship under controlled conditions.

5. **Historical methods**: When research is conducted on the basis of historical data, the researcher is said to follow the historical approach. It is a critical investigation of events, development, experiences of the past, the careful weighing of evident of the validity of the sources of information of the past and the interpretation of the weighed evidence.

6. **Comparative method**: It is also known as evolutionary or genetic methods. Though it is a popular research method used in pure sciences, it is now also used in the social sciences as well. It is based on comparison.



CHECK YOUR PROGRESS

Q.7: What do you mean by observation?

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Q.8: What is survey?

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2.6 RESEARCH PROCESS

Before going to discus in detail the methods of communication research let us have a brief overview on the research process. Research process consists of series of actions or steps necessary to effectively carry out a research and the desired sequencing of this step. Now, we are going to discuss briefly the various steps in a research process.

1. **Formulating the research problem**: At the very outset the researcher must select a problem that he wants to study i.e, he must decide the general area of interest or aspects of a subject matter that he would like to inquire into. There are two types of research problems. One is related to states of nature and other is related to the relationships between variables. After selecting the research problem, the formulation of a general topic into a specific research problem is required and it constitutes the first step in a scientific investigation. To formulate the research problem a researcher has to follow two steps. One, understanding the problem thoroughly and two, rephrasing the same into meaningful terms from an analytical point of view.

2. **Literature review**: Once the problems is formulated a brief summary of the problem should be written down. In this second stage the researcher should undertake extensive literature survey connected with the problem. A good library will be a great help to the researcher at this stage.

3. **Development of working hypothesis**: In the second stage the researcher must collect all the necessary information regarding the research problem from the literature survey. After this stage, the research should state in clear terms of the working hypothesis. Working hypothesis is a tentative assumption made in order to draw out and test its logical or empirical consequences. It sharpens his thinking and focuses attention on the more important facets of the problem.

4. **Preparing the research design**: In this stage the researcher has to prepare a research design. It is conceptual structure within which the research should be conducted. The preparation of such a design facilitates the researcher by providing the relevant evidence with minimal expenditure of effort, time and money.

5. **Determining sample design**: The research must decide the way of selecting a sample or what is popularly known as the sample design. It is a plan determined before any data are actually collected or before obtaining a sample from a given population. The researcher can adopt any type of sample design from the following—

   (i) Deliberate sampling.
   (ii) Random sampling.
   (iii) Systematic sampling.
   (iv) Stratified sampling.
   (v) Quota sampling.
   (vi) Cluster sampling and area sampling.
   (vii) Multi stage sampling.
   (viii) Sequential sampling.

6. **Collection of data**: Data collection is an important stage of a research process. A researcher has to collect primary data as well as secondary data utilizing various tools of data collection. We will discuss the methods of data collection in a separate unit in detail.

7. **Analysis of data**: After the data have been collected, the researcher turns to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories. The application of this category is to draw data through coding, tabulation and then drawing statistical inferences.

8. **Hypothesis testing**: After analyzing the data with the help of various data analyzing techniques the researcher is in a position to test the hypothesis, if any, he had formulated earlier.

9. **Generalizations and interpretations**: After the hypothesis testing the researcher can come to the end and he can generalize the investigated findings to build theory.

10. **Preparation of the report**: Finally, the researcher has to prepare the report or the thesis on what has been done by him. In this stage, the use of text, font, layout are some of the important aspects.



LET US KNOW

Qualities of a good research :

1. Good research is systematic.
2. Good research is logical.
3. Good research is empirical.
4. Good research is replicable.



CHECK YOUR PROGRESS

Q.9: What are the various steps in a research process?

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Q.10: Name the various types of sample design.

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2.7 LET US SUM UP

In this unit we have discussed the various types of research and the methods and process of research. The following are the main types of research—

- Descriptive versus analytical
- Applied research and fundamental research

- Quantitative and Qualitative Research
- Conceptual and Empirical Research
- Field setting research or laboratory research or simulation research
- Clinical or diagnostic research
- Historical research



2.8 FURTHER READING

1. *Research Methodology* by C.R. Kothari, New Age International Publishers, New Delhi
2. *Research Methodology Techniques and Trends* by V. V. Khanzode, A P H Publishing Corporation, New Delhi



2.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Empirical research relies on experience or observation alone, often without due regard for system and theory. It is data based research, coming up with conclusions which are capable of being verified by observation or experiment.

Ans. to Q. No. 2: The main objective of applied research is to find a solution for an immediate problem facing a society or media industry or business organization.

Ans. to Q. No. 3: Descriptive research includes surveys and fact finding enquiries of different types. The main objective of this type of research is to describe the state of affairs as it exists at present.

Ans. to Q. No. 4: Historical research is an important approach, which utilizes historical sources like documents, remains etc. to study the events or ideas of the past, including the philosophy of persons or groups at any remote point of time.

Ans. to Q. No. 5: Qualitative methods can be used in order to develop

quantitative tools. But qualitative methods can be used to explore and facilitate the interpretation of relationship between variables.

Ans. to Q. No. 6: Fill in the blanks-

1. Qualitative research is one of the oldest forms of social science research.
2. Quantitative research is the systematic scientific investigation of quantitative properties and phenomena with their relationships.
3. In the both researches data analysis differs considerately.

Ans. to Q. No. 7: Observation methods is a systematic viewing of a specific phenomenon in its proper setting for the purpose of gathering information for the specific study.

Ans. to Q. No. 8: Survey is a very popular branch of social science research. It can be defined as a specification of procedures for gathering information about a larger number of people by the collection of information from them.

Ans. to Q. No. 9: The following are the various steps in a research process-

- Formulation of the research problem
- Literature review
- Development of working hypothesis
- Preparing the research design
- Determining sample design
- Collection of data
- Analysis of the collected data
- Hypothesis testing
- Generalizations and interpretations
- Preparation of the report

2. The following are the various types of sample design—

- Deliberate sampling.
- Random sampling.
- Systematic sampling.
- Stratified sampling.
- Quota sampling.

- Cluster sampling and area sampling.
- Multi stage sampling.
- Sequential sampling.



2.10 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q 1: Define the concepts of qualitative research and fundamental research.

Q.2: What is historical research ?

Q.3: How does a researcher collect data through observation method?

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: What do you mean by quantitative and qualitative research? Explain the differences between quantitative and qualitative research.

Q. 2: Discuss the various types of research.

Q. 3: 'Research process consists of series of actions or steps necessary to effectively carry out a research' – elucidate.

Q. 4: Discuss some important research methods which are used for collection of data.

Q. 5: Explain briefly various steps of a research process.

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UNIT 3: COMMUNICATION RESEARCH

UNIT STRUCTURE

3.1 Learning objectives

3.2 Introduction

3.3 Meaning of communication research

3.3.1 History

3.3.2 Meaning

3.4 Types of communication research

3.5 Importance of research in mass media

3.6 Elements of communication research

3.7 Role of computer in communication research

3.8 Let us sum up

3.9 Further reading

3.10 Answer to check your progress

3.11 Model questions

3.1 LEARNING OBJECTIVES

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

- Discuss the meaning of communication research
- Explain the element of communication research
- Analyse the importance of research in mass media
- Name the various types of communication research

3.2 INTRODUCTION

In the earlier unit we have discussed the various types of research, such as, quantitative and qualitative researches and the differences among them. The unit then, dealt with the research methods, like the survey method, case study method, experimental method, historical methods etc. Finally, in that unit we have discussed on the research process step by step.

This unit introduces the meaning, definition and various aspects of Communication Research. It will also discuss the importance of communication research and mass media research. Elements of communication research are also included in our discussion in the unit.
The next unit, i.e. unit – 14 will intend to highlight the importance of the various research methods used for the communication research. Census, public opinion survey, exit poll surveys will be discussed with examples. That unit will be illustrated on the concept and method of content analysis, which is an important tool in media research.

3.3 MEANING OF COMMUNICATION RESEARCH

3.3.1 History

Mass communication research was started during the first two decades of the twentieth century. During the 1920's and 1930's researchers concluded that mass media had powerful effect on individual human behavior. From the 1940's through the 1960's, in the United States the researchers took the opposite track and argued that the effects of mass media on people were limited. During that time, researchers also began to explore the factors that influence media content. After the 1970's, research into the content influence grew enormously. Two strains of critical studies developed in the United States during the first half of the twentieth century. To show the communication as the foundation for developing a sense of community in a post industrial world, three great scholars Sharles Cooliy, Robert Park and John Dewey studied at Michigan and Mimesota. They explored the positive possibilities of modern communication. The second group of communication scholars came to the United States from Frankfurt of Germany. These scholars did not believe that modern media had the potential to improve the society. Their theoretical approach was based on the economics of media organizations and so they considered the specific professional practice to be irrelevant.

As stated earlier, in the last three decades the field of communication research has been changing with new dimensions. The effects and uses of research indicate that the impact of mass media on people and society is neither as powerful as it was once thought nor as limited as researchers later claimed. But the impact of the content depends on many factors. The recent scholars have pursued a variety of topics in the recent years with an emphasis on the commercialization of culture and the rule of media in maintaining power structures. We feel proud that the noted Assamese singer and the great son of the country Dr. Bhupen Hazarika did his doctoral research on mass communication in the later part of 1940's.

LET US KNOW



Dr. Bhupen Hazarika completed his B. A. in 1944 and his M. A. in Political Science in 1946 from Banaras Hindu University. Soon after, he left for New York, USA where he lived for five years and received his doctorate (PhD) in Mass Communication from Columbia University. He also received the Lisle Fellowship from Chicago University, USA to study the use of educational project development through cinema.

3.3.2 Meaning

Let us now discuss the meaning of the communication research. Zeam Folkerts and Stephen Lacy in their book "The Media in your Life- An Introduction to Mass Communication" has defined the mass communication research in these words : "Mass communication research involve the systematic study of media content, the forces that shape its creation, how and why people use media, and the impact of media content and media institutions on individuals and society". The researchers of the discipline have developed a systematic study of media contents. The reason for conducting communication research varies with the researcher and the funding organization of the research.

Mass communication research basically is an art of scientific investigation or an in-depth academic activity that lays stress on the various aspects of mass communication. It includes not only an in-depth investigation of theoretical aspects of mass communication but also a wide ranging inter-disciplines such as television, radio, newspaper, folk and traditional communication forms, advertising, public relations campaign, effectiveness of programmes, audience behavior and so on.

In a broad sense communication experts and theorists engage themselves in research to find out certain behavioural patters of human beings and to explore the relationship between the people and the society. This is to see how the effects of one on the other can be studied for the betterment of the communication efforts and the processes in future.

Mass media and the media research organizations need such research findings for shaping the news products to be launched, programmes or software to be introduced, so that the popularity can be gauged effectively to make it a profitable proposition. Now-a-days a new trend has come into mass media, especially TV news bulletins. That is, the same person is required to perform as a newscaster or newsreader, researcher, correspondent or reporter etc. on a continuously changing basis. In the same way, research departments in news as well as programme organizations are assuming more and more importance these days. So, you can understand the importance of background research in mass media.



CHECK YOUR PROGRESS

Q.1: What do you mean by communication research?

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Q.2: Fill in the blanks—

a. During the .....researchers concluded that mass media had powerful effect on individual human behavior.

b. The three great scholars who explored the positive possibilities of modern communication are.....

c. The second group of communication scholars came to the United States from Frankfurt of .....

d. Dr. Bhupen Hazarika received his doctorate (PhD) in Mass Communication from .....University

3.4 TYPES OF COMMUNICATION RESEARCH

Folkerts and Lacy state that the communication research begins with a paradigm, which is a set of assumptions about the nature of human behaviour. A variety of paradigms are available for scholars to use. Two paradigms dominate mass communication research. One is social science approach, which emphasizes on the use of theories building and empirical measurement to learn about human behaviors. The other approach is the critical approach that seeks an understanding of issues that are raised by connections between media and society.

The communication research can be broadly divided into two types. One is basic research and the other is the practical research.

(a) **Basic Communication Research**: As its name indicates it is the basic communication research that deals with the development of a theory. This type of research is carried out by the communication scholars or the researcher to develop theories and to examine various phenomena, exploring the relationship between the people and the media. For example, we can mention some research on conflict reporting and the impact of the community based reports on the general civilians. Another example, we can mention here is the impact or the effectiveness of some good programmes on children.

(b) **Practical research:** We know that applied research aims at finding a solution for an immediate problem facing a society or an

organization. Practical communication research can be compared with the concept of applied research. Media organizations conduct practical research in an effort to understand what content and services their audiences want and need. The goal of this types of research is to predict the consumer behavior for the media organizations to increase their audience. The film industry conducts research to determine the popularity of heroes and heroines. Folberts and Lacy stated that the same research topic can be examined by the basic and practical research. To determine how advertising affects voting can be considered as a basic research when it is done by political scientist or can be considered as a practical research when it is done by campaign consultants.

They said that mass communication research begins with a paradigm, which is a set of assumptions about the nature of human behavior. We can divide the approach of communication research into two. These are-

(i) Social science approach: For building an empirical measurement to learn about human behavior, we can use the social science approach in the communication research. This approach involves studies such as experiments and surveys.

(ii) Critical approach: This approach seeks an understanding of issues that are raised by the connections between media and society. To achieve the goals by using this critical approach the scholars and the researchers use a variety of techniques and have different economic and cultural perspectives.

Different types of research methods have been employed by the communication scientists. Both the qualitative and quantitative methods are used. By now you must be familiar with these terms. In the previous unit we have discussed these methods while enumerating the various types of research. Again, in this context we are going to analyze these methods again. Scholar Ronald Taylor defines qualitative research as “any systematic investigation that attempts to understand the meaning that things have for

individuals from their own perspective". Quantitative research, on the contrary, involves the use of statistical analysis with units of content or observations about individual behavior or attitudes. In the academic research both qualitative and quantitative methods are used to understand human behavior.

Qualitative research concentrates on real life settings and content. Examples of qualitative method include participatory observation, textual analysis and in-depth interviewing. On the other hand quantitative research is based on the measurement of the quantity. It helps researchers to make general statement as about larger groups such as the voter behavior of a country. In communication research content analysis is also used in a wide manner. We will discuss in detail the content analysis in the later stage.



LET US KNOW

Willbur Schramm

Internationally known communication researcher Willbur Schramm's contribution to the field is remarkable. He wrote more than one hundred research articles and books. He conducted extensive research in a many parts of the world including Asia, Africa, Samoa, India, Israel etc.



CHECK YOUR PROGRESS

Q.3: Fill in the blanks-

a. The communication research can be broadly divided into two types, one is .....and the other is the .....

b. Basic communication research deals with the.....

c. Practical communication research can be compared with the concept of.....research.

d. We can divide the approach of communication research into two -.....and.....

3.5 IMPORTANCE OF RESEARCH AND MASS MEDIA

Media stands for the tools or channels of communication. We have different types of media such as traditional forms, print, electronic etc. The main purpose of this media is to provide education information and entertainment to the target audience. To know the likings and disliking, needs and requirements of the target audience research is of much importance for media of mass communication. Except the public sector media, we know that almost all other media organizations are owned by private organization and profit making is the guiding principle of the private media organizations. For offering different media content to a heterogeneous audience, the media organizations always lay their stress on innovative ideas and improvised ways for providing better programme presentation that requires research. From determining the topics and issues for reporting in the print media, selection of ***scoops*** from the electronic news gathering, treatment of the stories of a film, use of public relations tools, preparation and campaigning of an advertisement, markets survey etc. in all the fields of mass communication, communication research plays a significant role.



Scoops: Latest information about something or somebody, particularly the details that are not generally known.

A democratic government cannot take any decision in a large scale or formulate policies and programmes without conducting a research. Because the result of the policies may affect crores of the people. Likewise, as it is popularly known as the fourth pillar of democracy, media cannot bring the attention of an audience to a specific issue without conducting a research among the target audience. For an investigative report a reporter must pursue a research on the issue. For development journalism also the media organizations must conduct some research. The relationship between public opinion and mass media on the one hand and the democratic Government on the other should be such that the unrepresented and underrepresented people or issues can be brought to the attention of the government or of the society to that they can be addressed properly.

Along with the practical aspects of the role of communication research on mass media, the theoretical aspect is also equally important. Media theory involves generalizing about the relationship between people or the society and the media. Different types of media theories and research models have been evolved from time to time. You may remember that there is a media theory which is known as *cultivation theory* and it was developed by George Garbner. It states that heavy television viewing influences people to adopt values, role and world views that are based on television content they watch. The media managers use research to understand what their audiences want. To decide to change their advertisers and to develop news and information Harold Laswell's *magic bullet theory* has led to the conclusion that media has universal and powerful effects.

From the limited effects research, Carl Hoveland and his colleagues found evidence for a limited effect model at the beginning of the Second World War. According to them, media effects is specific and limited. Pluralism was a concept ushered in by the works of Charles Horton Cooley, John Dewey and Robert E. Park. It espoused the coexistence and cooperation among the different elements of a power structure. They believed that a modern media could make possible a truly democratic community. Moderate effects research started in US in 1970's wherein it was found that media content had a greater impact on people's behavior than limited effects studies suggested, but the impact was not as great as was found by the *powerful effects researchers*.



CHECK YOUR PROGRESS

Q.4: What do you mean by media?

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Q.5: Name some types of media.

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Q.6: Who developed the cultivation theory?

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Q.7: Who developed the magic bullet theory?

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3.6 ELEMENTS OF COMMUNICATION RESEARCH

Winner and Dominic in their book *Mass Media Research* said that there are four basic elements of communication research. These are –

1. **Concept and constructs**: A *concept* is an abstract idea found by generalizing from particulars and summarizing related observations. Concepts are important in a communication research, because they simplify the research process by combining particular characteristics, objects or people into more general categories. Secondly, it simplifies communication among those who have a shared understanding of them.

   A *construct* has *three* basic characteristics. *First* of all, it is an abstract idea that is usually broken down into dimensions represented by lower level concepts. We can say that construct is a combination of concept. *Secondly*, a construct cannot be observed directly. *Lastly*, a construct is designed for some particular research purpose so that its exact meaning relates to the context in which it is found.

2. **Measurement**: Measurements are everywhere if a researcher assigns numerals to objects, events or properties according to certain rules. Numerals have no implicit quantitative meaning. In mass media research the researchers usually measure indicators of the properties of individuals or objects.

3. **Variables**: Variables are classified in terms of their relationship with one another. Independent variable and dependent variable are two major types of variables. Dependent variables are what the researcher wishes to explain. The researcher systematically varies the independent variables.

4. **Scale**: According to Wimmer and Dominic, measurement scale is the last basic element of communication research. A scale represents a composite measure of the variable. It is based on more than one item. Rating scales are common in mass media research. Some other scales such as thurstone scale, guttmen scale, likert scale, cementic differential scales etc are commonly used in media research.

Here, we want to acquaint you with some other important elements which are popular among the communication researchers. Feedback and feed forward are commonly used for communication researches.

We know that in a communication process feedback plays an important role. When a sender encodes a message to the receiver and when the receiver does not send any response or feedback to the sender, then it is not counted that the communication process is complete. Feedback is needed to know how the communication processes or efforts are influencing the persons or parties that have been targeted; feed back is also needed to determine if any improvements or changes are required to be effective for smooth flow of the process. Audience feedback is always required for all the media houses. Therefore, many media houses, conduct audience feedback surveys to improve the quality of their programmes.

Feed forward: Feed forward is a effective tool that provides individuals or organizations with suggestions for the future and helps them achieve a positive change in behaviour, output, quality of production etc. For example, suppose, a television channel or a newspaper is going to be launched within a short period. Then the media organization may conduct a survey as to what kind of programmes the target audience want to watch or what types of news they want to read in a newspaper. After analyzing the collected data from the survey, the media organization prepares the programmes or the news sections depending on the feed forward. It is widely used to determine the nature of programmes/news.

Basically, feed forward means the response about a certain event or activity being carried out which is acquired in advance by utilizing different methods.



CHECK YOUR PROGRESS

Q.8: What are the four basic elements of communication research?

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Q.9: Who wrote the book Mass Media Research?

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.....

Q.10: What is the meaning of 'feed forward'?

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.....

3.7 ROLE OF COMPUTER IN COMMUNICATION RESEARCH

Though a computer is nothing but a device that computes, now it can do anything. Computer technology has undergone a significant change over the period of last five decades. The present day microcomputer is far more powerful and cost effective compared to the world's first computers. The following are the important characteristics-

1. Speed: Computers can perform calculations in just a few seconds for which human beings would need a few days to do by hand.
2. Storage: We can store crores of phases and other programmes in a computer storage device.
3. The accuracy of a computer is consistently high.

The above three are only the main characteristics of a computer. In a research process, now-a-days, we cannot imagine to analyse quantitative data without the help of computer. In the information gathering stage now we are in a position that we can collect thousands of pages from digital libraries to internet. The internet has had a dramatic affect on the way people communicate dissemination of information. It has also affected the mass media research. Internet has-

- Created new method for gathering the data in mass media research.
- Changed the way researchers search for and disseminate information.
- Simplified collaboration and interaction among researchers.

Internet based research is now popular for the all categories of research. The following are the main advantages and disadvantages given by Wimmer and Dominic in their book.

Advantages -

1. Internet surveys are easy to conduct.
2. Questionnaires can be changed almost immediately if a change is required.
3. To collect and analyse the data it is the most cost effective method.
4. Respondents can proceed at their own speed and can read questions several times, if necessary.
5. The turn around of results is very quick.
6. Questionnaires can be interactive.
7. The internet allows access to all types of people.
8. Research projects can be replicated frequently if necessary.

Disadvantages -

Although internet research has become more popular and has advantages, we cannot ignore its disadvantages. Some of them are -

1. Control over the research situation. Researcher does not know who answers an internet questionnaire.
2. It is difficult to determine that the internet sample represents the total universe or population or not.
3. Many internet users are concerned with security and refuse to participate in any type of internet research project.
4. We cannot ignore the technical problems.
5. There are no research data about the appropriate length of internet surveys.

So, we have discussed the advantages and disadvantages of the internet research to complete a media or a communication project.

Computer and internet are very useful in this field and if we properly use the internet for any kind of media or communication research it can reduce the time, cost, labour and we may expect quality researches utilizing this new media.



CHECK YOUR PROGRESS

Q.11: What is a computer?

.....

.....

Q.12: What are the main characteristics of a computer?

.....

.....

Q.13: Define the term internet.

.....

.....



3.8 LET US SUM UP

- Mass communication research was started during the first two decades into the twentieth century. During the 1920's and 1930's researchers concluded that mass media had powerful effect on individual human behavior. From the 1940's through the 1960's, in the United States, the researchers took the opposite track and argued that the effects of mass media on people were limited. During this time, researchers also began to explore the factors that influence media content. After the 1970's, research into content influence began to grew enormously.
- Mass communication research basically is an art of scientific investigation or an in-depth academic activity that lays stress on the various aspects of mass communication. It includes not only an in-

depth investigation of the theoretical aspects of mass communication but also a wide ranging inter-discipline. It involves the systematic study of the media content, the forces that shape its creation, how and why people use media, and the impact of the media content and media institutions on individuals and society.

- The communication research can be broadly divided into two types. One is basic research and the other is the practical research. The internet has had a dramatic affect on the way people communicate dissemination of information and also it has also affected the mass media research.



3.9 FURTHER READING

1. *Mass Media Research* by C.D. Wimmer and J.R. Dominick



3.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Communication research basically is an art of scientific investigation or an in-depth academic activity that lays stress on the various aspects of communication.

Ans. to Q. No. 2: Fill in the Blanks—

a. During the 1920's and 1930's researchers concluded that mass media had powerful effect on individual human behavior.

b. Three great scholars Sharles Cooliy, Robert Park and John Dewey explored the positive possibilities of modern communication.

c. The second group of communication scholars came to the United States from Frankfurt of Germany.

d. Dr. Bhupen Hazarika received his doctorate (PhD) in Mass Communication from Columbia University.

Ans to Q No 3: Fill in the blanks-

a. The communication research can be broadly divided into two types, one is basic research and the other is the practical research.

b. Basic communication research deals with the development of a theory.

c. Practical communication research can be compared with the concept of applied research.

d. We can divide the approach of communication research into two— social science approach and critical approach.

Ans. to Q. No. 4: Media stands for the tools or channels of communication.

Ans. to Q. No. 5: Newspaper, radio, television are some examples of media.

Ans. to Q. No. 6: George Garbner.

Ans. to Q. No. 7: Harold Laswell

Ans. to Q. No. 8: The following are the four basic elements of communication research-

- Concept and constructs
- Measurement
- Variables
- Scale

Ans. to Q. No. 9: Wimmer and Dominic wrote the book *Mass Media Research.*

Ans. to Q. No. 10: Technically 'feed forward' is a term describing an element or pathway within a control system when it passes a controlling signal from a source in the control systems external operator to a load elsewhere in its external environment.

Ans. to Q. No. 11: A computer is a machine that manipulates data according to a set of instructions.

Ans. to Q. No. 12: The following are the important characteristics-

1. Speed: Computers can perform calculations in just a few second that human beings would need, a few days to do by hand.
2. Storage: We can store crores of phases and other programmes in a computer storage device.
3. The accuracy of a computer is consistently high.

Ans. to Q. No. 13: The Internet is a global network of interconnected computers, enabling the users to share information along multiple channels. Typically, a computer that connects to the Internet can access information from a vast array of available servers and other computers by moving information from them to the computer's local memory.



3.11 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q 1: What is the importance of research in the field of mass media?

Q.2: What are the types of communication research ?

Q.3: Analyze the advantages of using internet in research.

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: Enumerate the advantages and the disadvantages of the internet based research.

Q. 2: What do you mean by communication research? Explain with suitable examples.

Q. 3: Discuss the elements of communication research.

Q. 4: Write an essay on the importance of computer in communication research.

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UNIT 4: RESEARCH METHODS

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Survey Method

- 4.3.1 Characteristics of survey method
- 4.3.2 Steps involved in a survey
- 4.3.3 The purpose of the survey

4.4 Types of Survey

- 4.4.1 Social Surveys
- 4.4.2. Economic Surveys

4.5. Advantages and Limitations of Survey Method

4.6 Content Analysis

- 4.6.1 Procedure of Content Analysis
- 4.6.2 Use of Content Analysis

4.7 Let us sum up

4.8 Further Readings

4.9 Answers to check your progress

4.10 Model Questions

4.1 LEARNING OBJECTIVES

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

- Described the survey method,
- Identify the characteristics of survey method and the steps involved in a survey,
- Analyse Social and Economics Surveys,
- Narrate the advantages and disadvantages of survey method,
- Describe the concept of content analysis with special emphasis on its procedure and utility.

4.2 INTRODUCTION

Research has moved during this century from the periphery to the centre of our social and economic life. The term Research consists of two terms; Re- meaning again and again, and, Search- meaning to find out something. Therefore, Research means to observe a phenomenon again and again from different dimension. There are various methods of research. Survey method is one of the important methods among them. In this unit you will get a basic understanding of Survey Method, its characteristics and the steps involved in the survey. You will also be introduced to two most important types of surveys- social and economic. This unit will also guide you in your basic understanding of content analysis , its procedure and its utility.

4.3 SURVEY METHOD

Survey is a" fact-finding" study. It is a research method involving collection of data directly from a population or a sample thereof at particular time. It requires expert and imaginative planning, careful analysis and rational interpretation of the finding.

Data may be collected by observations, interviewing or mailing questionnaires. Using simple or complex statistical techniques depending upon the objectives of the study we may make the analysis of the data.

4.3.1 Characteristics of survey method

The survey method has certain characteristics-

1. It is always conducted in natural settings. It is a field study.
2. It seeks response directly from the respondent.
3. It can cover a very large population because of using sampling techniques.
4. A survey may be an extensive or intensive study. An extensive study covers wider samples. An intensive study covers a few samples and tends to "dig deeper".

5. A survey covers a definite geographical area, such as a city, or a district, or a state.

The quality of a survey depends upon the thoroughness of the planning, soundness of sampling, the adequacy and the reliability of the data, the quality of analysis and the interpretation of the finding.

4.3.2 Steps involved in a survey

The following are the steps that have to be followed while making a survey:

1. Selection of a problem and its formulation: First the researcher has to fix the problem based on the literature review and formulate in a scientific and logical manner. While finding the problem, the researcher has to highlight the justification of the problem.
2. Preparation of the research design: After finding out the problem, the researcher has to design the research problem. While designing it, s/he has to have the knowledge of types of data and its availability, the source of data, study area, methods to be followed in the analysis and the expected results.
3. Operationalisation of the concepts and construction of measuring indexes and scales: While designing a research problem, researcher has to have clear idea about the concepts that are going to use in the research design. It is always better to link up your research design with theory and if not then have to highlight the probable policy implication of it. The concepts should be operationalized in such a way that you will have the idea of the variables that to be used and also the scales that are going to use to place them in quantitative or qualitative manner.
4. Sampling: Sampling is the method that is used to represent the whole population. Due to lack of either time or resources, you have to give your comment on your research problem for the

whole population based on few observations. In that situation, you have to select those few observations in such a way that it is free from all biases and will represent your whole population. There are various methods of sampling and the researcher has to use one or more than one based on justification or requirement of the research design.

5. Construction of tools for collection of the data and their pre-test: After having decided about the types of data that are to be used in your research problem, it is necessary to frame either questionnaire or schedule to collect the primary data. Regarding the collection of secondary data, though there are no specific formats but the researcher have to know the sources from where the information can be collected. After framing questionnaire/ schedule, Cornbach's alpha test can be used to verify the reliability and validity of the questionnaire.
6. Field work and collection of the data: After fixing the required variables for the research problem and the types of data to be used, the researcher has to justify the field area from where the data will be collected. In order to collect data, proper sampling method/s has to be followed.
7. Processing of the data and tabulation: Once the data collection is over, it is necessary to process the collected data through checking and cross checking. If the information collected through the questionnaire or schedule are not adequate due to no information or misinformation in some questionnaire or schedule, then recollection of data from the particular source have to be performed. Tabulation is the process through which data are presented.
8. Analysis of the data: There are various research tools that can be used to analyze data. Data can be analyzed through diagram, table and using statistical tools or models. Uses of these methods are based on the requirement of the research problem.

9. Reporting: Reporting is the last method though which a researcher is going to place the above steps that have been followed in a research problem. There are some standard formats through which a report can be placed in an acceptable manner.

4.3.3 The purpose of the survey

Survey serves several purposes as given below:

1. The purpose of many surveys such as population census, economic survey, expenditure survey, marketing survey, etc., is simply to provide information to government planners or business enterprises. These surveys have a descriptive purpose.
2. Many enquire aims to explain phenomenon. Their function is to test hypotheses, to explain the casual relationship between variables and to assess the influence of various factors on some phenomenon like job satisfaction, labour productivity, and consumer behaviour. Surveys aiming at explanation involve in depth analysis and complex interpretations.
3. Survey may be designed to make comparison of the demographic group (comparison of low income groups with high income groups) or real groups, for e.g., work group in factories and offices. Comparison of behavioural or attitudinal group may also be made.
4. Survey concerned with cause and effect relationship can be useful for making predictions. For example, if relationship between increase in income and purchase of durable goods are established in a consumer behaviour survey, a prediction about future demand for durable goods with reference to anticipated increase in income can be made.

4.4 TYPES OF SURVEY

There are basically two types of survey-one is social survey and the other is economic survey.

4.4.1 Social Surveys

Social surveys are widely used in the field of social sciences.This type of survey is basically used to collect data on demographic characteristics and attitudes of residents of a particular area.Social surveys are associated with the following features-

1. Demographic characteristic of a group of people: It includes family composition, marital status, age and so on. Population census is primarily on the demographic aspect of the people.
2. Social environment of the people: It covers all social factors, housing conditions, and social norms, amenities, and social institutions.
3. People's attitude and opinions: It deals with various issues (direct and indirect elections of the head of the government), systems (democracy), and schemes of programmers (family planning).
4. People's behavior and activities: It refers to how people make use of leisure time, newspaper reading, reaction etc. People's behaviour is concerned with their consumption pattern, life style, organizational behaviour, group dynamics etc.

4.4.2 Economic Surveys

Economic Surveys are generally associated with-

1. Economic Condition of people: It includes occupation, income, saving, interests, assets, etc.
2. Working of economic units: It refers to shops, business firm, financial institutions, etc. Economic system may refer to capitalism, socialism, and mixed economy.
3. Operation of an economic system.

4.5 ADVANATGES AND DISADVANTAGES OF SURVEY METHODS

Advantages/merits of survey methods:

The major advantages of the survey method are:

1. The versatility of the survey method is the greatest strength. It is the only practical way to collect many type of information from the individual, such as personal characteristics, socio economic data, attitudes, opinions, experience and expectations.
2. The survey method facilitates drawing generalization about large populations on the basis of studies of representative samples.
3. The survey method is fixable to permit the various methods of collection of data, viz, observations, information, and mailing.
4. Survey sensitizes the researcher to unanticipated or unknown problems. The collection of data from respondents through interviewing or mailing often covers facts previously unknown to the researcher.
5. Surveys are useful instruments for verifying theories.

Disadvantages/Limitations of survey methods:

Although survey method is a research instrument of great versatility and extensive application, it has certain limitations:

1. Survey method is primarily meant for collection of data from primary sources, viz, individuals, households, and institutions, hence its feasibility depends upon the willingness and cooperation of the respondents.
2. A sample survey is subject to sampling error. Its finding must be interpreted in the light of this error.
3. The survey method depends primarily on verbal behaviour. The respondent can give untrue or misleading answers. Hence a survey is subject to response error.
4. A survey is also subject to the measurement implicit in quantifying attitudes abilities, behaviour and other personal traits.
5. There is a limit of number of items of information that can be collected in a single survey. There is an optimal length of time for an interview. Beyond that point, interview weariness sets in. Hence, the extent of the data requirement should be limited to the tolerance level of respondent.

6. A sample survey design to represent a population over a wider geographical area may not give adequate representation to any population characteristics, which is highly localized. This means that the influence of specific local social groups cannot be assessed through a national survey.
7. The survey method is alone inadequate to analyze adequately the complex fabric of social organization. It is also not well suited to study the historical development.
8. Survey is very expensive from time to time. Hence an individual cannot afford to carry out an expensive survey out of his sources.

The above are the drawbacks of the survey method to consider when a person wants to apply this method in research.

4.6 CONTENT ANALYSIS

Content analysis is another important method of research. In this method, written communication material is analyzed for identifying important elements or facts. B Berelson in 1959 defined content analysis as, 'It is a research technique for the objective system and quantitative description of the manifest of communication.' Content analysis is a research tool focused on the actual content. It is used to determine the presence of certain words, concepts, themes, phrases, characters or sentences within texts and to quantify their presence in an objective manner. Content analysis is also considered as a method of data collection and analysis. This is used for collecting data from archival records, newspapers, diaries, letters, minutes of meetings and the like. The content of written materials serves as a basis of inference. This analysis is made objectively and systematically. In content analysis, frequencies are marked for certain terms, ideas, concepts, reactions expressed in the content or communication. Content analysis is generally used in qualitative research and philosophical research.

There are two general categories of content analysis:

(a) Conceptual Analysis, and

(b) Relational Analysis.

a. Conceptual Analysis : Conceptual analysis is the most important category of content analysis. Traditionally, content analysis has most often been thought of in terms of conceptual analysis. In conceptual analysis, a concept is chosen for examination and the number of its occurrences within the text is recorded. Because terms may be implicit as well as explicit, it is important to clearly define implicit terms before the beginning of the counting process. To limit the subjectivity in the definitions of concepts, specialized dictionaries are used.

Conceptual analysis begins with identifying research questions and choosing a sample or samples. Once chosen, the text must be coded into manageable content categories. The process of coding is basically one of selective reduction, which is the central idea in content analysis. By breaking down the contents of materials into meaningful and pertinent units of information, certain characteristics of the message may be analyzed and interpreted.

In conceptual analysis, the researcher simply wants to examine presence with respect to his/her research question, i.e. whether there is a stronger presence of positive or negative words used with respect to a specific argument or respective arguments.

b. Relational Analysis : Generally, relational analysis builds on conceptual analysis by examining the relationships among concepts in a text and with other sorts of inquiry, initial choices with regard to what is being studied and/or coded for, often determines the possibilities of that particular study. For relational analysis, it is important to first decide which concept will be explored in the analysis. Studies have been conducted with as few as one and as many as 500 concept categories. Obviously, too many categories may obscure your results and too few can lead to unreliable and potentially invalid conclusions. Therefore, it is important to allow the context and necessities of your research to guide your coding procedures.

There are many techniques of relational analysis available and this flexibility makes for it popular in various fields. Researchers can devise their own procedures according to the nature of their project. The process of relational analysis has achieved a high degree of computer automation but still is, like most forms of research, time consuming. Perhaps the strongest claim that can be made is that it maintains a high degree of statistical rigour without losing the richness of detail apparent in even more qualitative methods.

4.6.1 Procedure

Content analysis is a research method, which is different from other research methods. It is a specific form of descriptive method of research. Heman in 1968 has described the procedure of content analysis that included six steps which are as follows:

1. **Definition of unit analysis:** It is the first step of content analysis. Research has to delimit the area of the unit. The study is to be stated in few words or sentence. A unit is that aspect which can be studied independently. Heman has given clear definition of a unit of research. It can be understood with small structure.
2. **Marking frequencies:** The units are counted by researcher. These units are classified on some criterion. The frequencies are arranged category wise. The frequencies of each category are counted and units are noted category wise.
3. **Direction and depth:** In certain situation it is essential that the category of a unit is determined on the basis of direction and depth of the unit. Thus the frequencies of a unit are noted separately for direction and depth.
4. **Incidental events:** The purpose of incidental event is to discover the reference of genesis of the unit. A researcher thinks that communication in the unit is made in favour or against. It is only the way to have true communication of a unit.

5. **Sampling:** The sampling is the major problem of content analysis. The unit analyzed by the researcher must represent the whole content material. This situation or unit can help in generalization. He should be very objective and unit should be selected on the basis of some rationale.
6. **Means of writing report:** In content analysis technique results are drawn. A researcher has to observe some precautions. The data collected should be reliable and valid. Some scale can be used for this purpose. The results should be reported in the form of generalization.

4.6.2 Uses of content analysis

Content analysis can be applied to examine any piece of writing or occurrence of recorded communication. Hence, content analysis is used in large number of fields, ranging from marketing and media studies, to literature and rhetoric, gender and age issues, sociology and political science, psychology and cognitive science, as well as other fields of inquiry. Content analysis is a new technique of research and it has the following uses:

1. Content analysis is a systematic method because the content or communication material is analyzed scientifically. It is the most useful technique for data collection.
2. This technique provides valid facts. It has high external and internal validity of results.
3. Content analysis is used to study the past records and documents.
4. This method makes comparative study of cultures. The cultural development is studied by this technique.
5. The behaviour patterns and national cultures can also studied by the content analysis technique.
6. The content analysis of a material explores and reveals several dimensions of persons and society. This technique is also used for studying the psychology of persons and society.



4.7 LET US SUM UP

- The term Research consists of two terms; Re- meaning again and again, and, Search- meaning to find out something. Therefore, Research means to observe a phenomenon again and again from different dimension.
- Survey is a" fact-finding" study. It is a research method involving collection of data directly from a population or a sample thereof at particular time. It requires expert and imaginative planning, careful analysis and rational interpretation of the finding.
- Data may be collected by observations, interviewing or mailing questionnaires.
- The quality of a survey depends upon the thoroughness of the planning, soundness of sampling, the adequacy and the reliability of the data, the quality of analysis and the interpretation of the finding.
- The purpose of many surveys such as population census, economic survey, expenditure survey, marketing survey, etc., is simply to provide information to government planners or business enterprises. These surveys have a descriptive purpose.
- Survey may be designed to make comparison of the demographic group (comparison of low income groups with high income groups) or real groups, for e.g., work group in factories and offices. Comparison of behavioural or attitudinal group may also be made.
- Survey concerned with cause and effect relationship can be useful for making predictions. For example, if relationship between increase in income and purchase of durable goods are established in a consumer behaviour survey, a prediction about future demand for durable goods with reference to anticipated increase in income can be made.
- There are basically two types of survey-one is social survey and the other is economic survey.

- Content analysis is a research tool focused on the actual content. It is used to determine the presence of certain words, concepts, themes, phrases, characters or sentences within texts and to quantify their presence in an objective manner.
- Conceptual analysis is the most important category of content analysis.In conceptual analysis, a concept is chosen for examination and the number of its occurrences within the text is recorded.
- Relational analysis builds on conceptual analysis by examining the relationships among concepts in a text and with other sorts of inquiry, initial choices with regard to what is being studied and/or coded for, often determines the possibilities of that particular study.
- Content analysis is used in large number of fields, ranging from marketing and media studies, to literature and rhetoric, gender and age issues, sociology and political science, psychology and cognitive science, as well as other fields of inquiry.



4.8 FURTHER READING

1. Research Methodology, Methods and Techniques- C. R Kothari, New Age International, New Delhi
2. Content Analysis, An Introduction to its Methodology(Second Edition), Klaus Krippendorff, Sage Publications, U.S.A
3. Research Methods, Ram Ahuja, Rawat Publications, Jaipur



4.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Survey is a" fact-finding" study. It is a research method involving collection of data directly from a population or a sample thereof at particular time. It requires expert and imaginative planning, careful analysis and rational interpretation of the finding.

Ans. to Q. No. 2: There are basically two types of survey- social survey and economic survey.

Ans. to Q. No. 3: Content analysis is another important method of research. In this method, written communication material is analyzed for identifying important elements or facts. Content analysis is a research tool focused on the actual content. It is used to determine the presence of certain words, concepts, themes, phrases, characters or sentences within texts and to quantify their presence in an objective manner. Content analysis is also considered as a method of data collection and analysis. This is used for collecting data from archival records, newspapers, diaries, letters, minutes of meetings and the like. The content of written materials serves as a basis of inference. This analysis is made objectively and systematically. Content analysis is generally used in qualitative research and philosophical research.

Ans. to Q. No. 4: There are two general categories of content analysis - Conceptual Analysis and Relational Analysis

Ans. to Q. No. 5: Conceptual analysis is the most important category of content analysis. In conceptual analysis, a concept is chosen for examination and the number of its occurrences within the text is recorded. Conceptual analysis begins with identifying research questions and choosing a sample or samples. Once chosen, the text must be coded into manageable content categories. The process of coding is basically one of selective reduction, which is the central idea in content analysis. By breaking down the contents of materials into meaningful and pertinent units of information, certain characteristics of the message may be analyzed and interpreted.In conceptual analysis, the researcher simply wants to examine presence with respect to his/her research question, i.e. whether there is a stronger presence of positive or negative words used with respect to a specific argument or respective arguments.

Ans. to Q. No. 6: Relational analysis builds on conceptual analysis by examining the relationships among concepts in a text and with other sorts of inquiry, initial choices with regard to what is being studied and/or coded for, often determines the possibilities of that particular

study.There are many techniques of relational analysis available and this flexibility makes for it popular in various fields. Researchers can devise their own procedures according to the nature of their project. The process of relational analysis has achieved a high degree of computer automation but still is, like most forms of research, time consuming. Perhaps the strongest claim that can be made is that it maintains a high degree of statistical rigour without losing the richness of detail apparent in even more qualitative methods.



4.10 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q. 1: State the characteristics and steps involved in a survey method.

Q. 2: Mention any two advantages and two disadvantages of survey methods.

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: Differentiate between conceptual analysis and relational analysis.

Q. 2: Describe the procedure of content analysis as given by Heman in 1968.

Q. 3: Analyse the uses of content analysis.

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UNIT 5: RESEARCH PLAN

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Research Plan

5.3.1 The content of research plan

5.4 Research Problem

5.4.1 Defining a Research Problem

5.4.2 Process of identification of a research problem

5.4.2 Criteria for selection

5.5 Formulation of the selected problem

5.6 Hypothesis

5.6.1 Characteristics of hypothesis

5.6.2 Types of hypothesis

5.7 Research Design

5.7 1 Features of a good research design

5.7.2 Nature of research design

5.7.3 Classification of research design

5.7.4 Preparation of the research design

5.8 Let us sum up

5.9 Further readings

5.10 Answers to check your progress

5.11 Model questions

5.1 LEARNING OBJECTIVES

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

- Define Research Plan and identify its contents
- Define Research Problem
- Analyse the process of identification of a research problem
- Discuss the criteria for selection of a research problem
- Define Formulation and its process

- Define hypothesis, characteristics and its types
- Discuss the concept of Research Design

5.2 INTRODUCTION

By now you must have got a fair understanding of the different methods of research specially survey method and content analysis.In this unit, you will get a basic understanding of research plan and its content along with research problem. You will also be introduced to the concept of hypothesis and research design.

5.3 RESEARCH PLAN

A Research Plan is a document written by a researcher that provides a detailed description of the proposed programme. It is a systemic investigation to establish facts or principles or to collect information on a subject. The purpose of the research plan is to describe what, why and how of the proposal. This is the core of the proposal and will be reviewed with particular care.

5.3.1 The content of research plan

In general, the research plan covers the following essential sections:

1. **Introduction:** The introduction of a research plan or proposal should place the research problem in historical prospective, state the need for studying it.
2. **Statement of the problem:** The research problem should be defined, pointing out its core nature and its importance. The issue relating to this may also be stated. This statement gives direction to the research problem.
3. **Review of the previous studies:** In the selected studies, others might have previously made some studies. Therefore, a review of the available study to find out its gaps and filled the gaps.

4. **Scope of the study:** A complete study of any well-known problem is non-manageable. Therefore, scope and dimension of the study should be delimited with reference to the topical scope-breadth and depth, geographical area to be covered, reference period, the type of institution/respondents to be studied, the issue to be analyzed, etc.
5. **Objective of the study:** The specific objectives of the study should be stated clearly. These refer to the questions to which the researcher proposes to seek answer through the study. Although there is no limit to the number of research objectives, it is desirable to limit the objectives to reasonable number.
6. **Conceptual model:** This section is the heart of the research plan. This is where the researcher formulates and develops the structure of relationships among the variables he is investigating.
7. **Hypothesis:** These are logically deduced from the theoretical framework above. These refer to the anticipated outcome or possible answer to the research question. They should be conceptually clear, specific and simple.
8. **Operational definition of concepts:** The major concepts used in the title of the study, is its objectives. The investigative questions and the hypothesis should be identified.
9. **The significance of the study:** It is important to point out the relevance and significance of the investigation.

There are other important contents of a research plan, viz, geographical area to be covered, reference period, methodology, sampling plan, tool for gathering data, plan of analysis, chapter scheme, time budget, financial budget and so on.

This research plan with modifications made at implementation stage and a description of the experiences of the field work will form part of the report under the title "The Design of the study''.

While discussing a research plan, first it is very important to discuss about a research problem.

5.4 RESEARCH PROBLEM

A research problem, in general, refers to some difficulty, which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same. Research work is oriented towards a solution of a problem or seeks an answer of questions. Hence, the first step of a research process is to identify the research problem.

There are various components of a research problem and they are:

1. There must be an individual or a group, which has some difficulty or problem.
2. There must be some objectives to be attained. If one wants nothing, one cannot have a problem.
3. There must be alternative means (or the course of action) for obtaining the objective(s) one wishes to attain. This means that there must be at least two means available to researcher. If he/she has no choice of means, they cannot have a problem.
4. There must be some doubt in the mind of researcher with regard to the selection of alternatives. This means that researcher must answer the question relative to the efficiency of the possible alternatives.
5. There must be some environment(s) to which the difficulty pertains.

Thus, a research problem is one, which requires a researcher to find out the best solution for the given problem, i.e., to find out which course of action the objective can be attained optimally in context of a given environment. But there are several factors, which may make research problem complicated. The environment may change affecting the efficiency of the course of action or the values of outcomes; the number of alternative course of action may be large; persons not involved in making the design may be affected by it and react to it favourably or unfavourably and similar others. Of all the elements, (at least) the important ones may be thought of in context of the research problem.

5.4.1 Defining a research problem

The selection of a problem is the first step in research. The term' problem' means a question or issue to be examined. The selection of a research problem is not an easy task; it itself is a problem. It is at least amenable to formal methodological treatment. Vision, an imaginative insight, plays an important role in the process. Nevertheless, every researcher finds out his own salvation for the research problem, which cannot be borrowed. A problem must spring from the researcher's mind like a springing it on own seeds. However, a researcher while selecting a research problem or subject for research may observe the following points.

1. Subject, which is overdone, should not be normally chosen, it would be difficult task to throw a new light in such case.
2. Controversial subject should not become the choice of an average researcher.
3. The subject selected for the research should be familiar and feasible so that the related research material; or source of research are within one's reach. Even then, it is quite difficult to supply definite ideas concerning how a researcher should obtain his/her research. For this purpose they make contact with university professors or experts and they may well read of articles published in current literature available in the subject. They may discuss with others what they have in mind concerning the problem.
4. Too narrow or too vague problem should be avoided.
5. The important subject matter, the qualification and the training of the researcher, the cost involved, the time factor are few other criteria that must also be consider while selecting a problem.
6. The selection of the problem must be preceded by a preliminary study. This may not be necessary when the problem requires the conduct of a research closely similar to one that has already been done. But the field of enquiry is relatively new and does

not have available set of well-developed technique, for this a brief feasible study must always be undertaken.

If the subject for research is selected properly by observing the above-mentioned point, the research will not be a boring drudgery; rather it will be an interesting one. The subject or the problem selected must involve the researcher and must have an upper most place in their mind so that they may undertake all pains needed for the study.

5.4.2 Process of identification of a research problem

The process of identification of problem for academic research may consist of following steps:

1. Selection of discipline: The discipline or subject in which one proposes to do research may be selected e.g., Economics, Management, Commerce etc., etc,.
2. Demarcating the broad area or a particular aspect of selected subject: The second step is to select a particular aspect of the selected subject. For example, if the selected subject is financial management, then one may select capital budgeting, financial leverage, working capital, and management as a specific area of study.
3. Identifying two or more specific topics in the selected broad area: This is the final step in identification problems. This requires a grasp of the branch of the subject as a whole and awareness of work already done on it. A review of concerned literature including research and survey of research published by the research council like Indian Council of Social Science Research, New Delhi, intensive reading and reflective thinking, and discussion with the guide help a student in identifying specific topics or issues related to research.

A student cannot just select anyone of the identification problem of his/her research. He/she has to evaluate them for choosing the most appropriate one. How can evaluation be done and against what criteria?

5.4.3 Criteria for selection

The selection of one appropriate researchable problem out of identification problems requires evaluation of those alternatives against certain criteria. They are:

1. Internal or personal criteria or factor
2. External criteria or factor.

Internal criteria consist of

(1) Researcher's interest

(2) Researcher's competence, and

(3) Researcher's own resource, viz, finance and time.

External factor includes

(1) Researchability of the problem

(2) Its importance and urgency,

(3) Novelty of the problem

(4) Feasibility

(5) Facilities,

(6) Usefulness and social relevance, and

(7) Research personal.

- **Researcher's interest:** The problem should be interesting for the researchers and challenging to them. Without interest and curiosity, they may not develop sustain perseverance. Even a small difficulty may become an excuse for discounting the study.
- **Researcher competence:** The researchers must be competent to plan and carry out the study of the problem. They must have the ability to grasp and deal with it. They must have adequate knowledge, methodology, and statistical procedures.
- **Researcher's own resources:** In the case of a research to be done by a researcher on his own, consideration of his own financial resources is pertinent.
- **Researchability:** The problem should be researchable, i.e., amenable for finding answers to the questions involved in it through scientific method. "Although every problem in science

involves a question or a series of questions, not every question qualifies as a scientific problem." To be researchable, a question must be one, of which observation or other method of collection in the real world can provide the answer.

- **Importance and urgency:** Problems required for investigation is unlimited, but available research efforts is very much limited. Therefore selecting problem for research, their relative importance and significance should be considered. An important urgent problem should be given top priority over an unimportant one.
- **Novelty and originality:** The problem must be novel. There is no use of wasting one's time and energy on a problem already studied thoroughly by others. This does not mean that replication is always needless. In social sciences in some cases, it is appropriate to replicate a study in order to verify validity of its findings to different situations.
- **Feasibility:** A problem is new one and also important, but if research on it is not feasible, it cannot be selected. Hence, feasibility is very important for consideration. Some of the questions that should be considered in examining the feasibility are:
    1. Are suitable research technique, such as measurement devices and technique of analysis available?
    2. Are accurate and reliable data available? The reliability of the finding depends upon the quality of the data.
    3. Will the authorities of the concerned institutions extend the required cooperation in furnishing data or permit access to records? Some organization like commercial banks, sole proprietary and partnership concerns and private companies do not easily extend cooperation to researcher.
    4. Will the respondent be willing to be interviewed?
    5. Can the study completed within the time available?
- **Facilities:** Research requires certain facilities such as well-equipped library facility, suitable and competent guidance, data

analysis facility, etc. Hence, the availability of the relevant problem must be considered.

- **Usefulness and social relevance:** Above all, the study of the problem should make significant contribution to the concerned body of knowledge or to the solution of some significant practical problem. It should be socially relevant.
- **Research personal:** Research undertaken by the research organization and professors require the service of investigators and research officers. But in India and other developing countries, research has not become a prospective profession. Hence talented persons are attracted to the research project.
- **Conclusion:** Select a feasible and researchable problem which is interesting to you within your competence and manageable within the available time and resources, and at the same time it has some importance and social relevance, and for which required facilities are available.



CHECK YOUR PROGRESS

Q.1: What is a research plan?

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.....

Q.2: What is a research problem?

.....

.....

Q.3: What are the two criteria for selection of a research problem?

.....

.....

5.5 FORMULATION OF THE SELECTED PROBLEM

Introduction:

For selecting a feasible and researchable problem, which is interesting and also has some importance and social relevance, formulation

of the selected problem is essential. The problem selected in research may initially be vague topic. The question to be studied or the problem to be solved may not be known. Why the answer/solution is wanted also is not known. Hence, the selected problem should be defined and formulated.

What is formulation?

Formulation means translating and transforming the selected research problem topic into a scientifically researchable question. It is concerned with exactly what the research problem is and why is it studied.

Merton identifies three principle components in the progressive formulation of a problem for research.

1. The originating question (what want and what to know).
2. The rational (why aspect).
3. The specifying questions (possible answer to the originating question).

The originating question: It indicates what the problem is. It may be of different kinds. It may call for discovering new and more decisive facts relating to the subject matter of the study; it may put to the question the adequacy of certain concepts, may be related to empirical validity; or it may be related to the structure of an organization.

- Rationale of the question: Rationale is the statement of reasons why a particular question is posed. It states how the answer to the question will contribute to theory and practice. The rationale helps to make discrimination between scientific and trivial question.
- Specifying question: The originating question is decomposed into several specific questions in order to identify the observations/data that pointed, clear and empirically verifiable. They are known as "investigative question". Solution of it has implications for theory/ systematic knowledge and/or the practice.

Formulation process:

The process of formulation involves the following steps:

- Developing title: The title should be carefully worded. It should indicate the core of the study, reflect the real intention of the

researcher, and show what is the focus. The title may also indicate the geographical area of the study.

- Building a conceptual model: On the basis of our theoretical knowledge under study, the nature of the phenomenon, its properties/elements and their inter-relations should be identified and structure into a framework. This conceptual model gives an exact idea of the research problem and shows its various properties and variables to be studied.

Defining the objective of the study:

For conducting an efficient research study, it is very important to define the objective of the study. The objective refers to the question to be answered through the study. They indicate what we are trying to find out from the study.

The objectives are derived from conceptual model. They state which elements in the conceptual model-which level of, which kind of model, which properties and which connection among properties- are to be investigated. But it is the conceptual model that defines, describes, and states the assumptions underlying these elements.

The objective may aim description or explanation or analysis of casual relationship between the variables, and indicate the expected results or outcome of the study.

The objective may be specified in form of either statements or questions.

Illustration: The profitability of the commercial bank has tended to decline year after year even though the business- deposits and deployment of the funds- has been increasing. How a researcher may formulate a problem when he/she views the problems?

- Title of the research problem: An enquiry into the declining trend in the profitability of commercial banks.
- Objectives of the study:

  The objectives of the study are

  - To identify the major factors affecting banks profitability.

- To determine the major causes of the declining trend in its profitability, and
- To develop a strategy for improving banks profitability.

The above objectives may be stated in question form

- What are the factors affecting banks profitability?
- What are the major causes of the declining trend in its profitability?
- What strategy can be adopted for improving the bank's profitability?

The successful research will provide answer to these questions.

5.6 HYPOTHESIS

Hypothesis is one of the important components included in a research plan. Hypothesis is a tentative proposition formulated for empirical testing. It is a declarative statement of combining concepts. It is a tentative answer to the research question. It is tentative, because its variety can be evaluated only after it has been tested empirically. On the other hand, it is one simply means of a mere assumption or some supposition to be proved or disproved. But for a researcher, hypothesis is a formal question that he intended to resolve. Thus a hypothesis may be defined as a proposition or a set of propositions set forth as an explanation for the some specified group of phenomenon either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts.

5.6.1 Characteristics of hypothesis

Hypothesis must possess the following characteristics:

1. Hypothesis should be clear and precise. If hypothesis is not clear and precise, the interference drawn on its basis cannot be taken as reliable.
2. Hypothesis should be capable of testing. In case of untestable hypothesis, many times, research programmers have bogged down.

3. Hypothesis should state the relationship between variables, if it happens to be a rational hypothesis.
4. Hypothesis should be limited in scope and must be specific. A researcher must remember that narrow hypothesis are generally more testable and he should test such hypothesis.
5. Hypothesis should be stated as far as possible in most simple term so that the same is easily understandable by all concerned.
6. Hypothesis should be consistent with most known facts i.e., it must be consistent with a substantial body of facts. In other words, it should be one which judges accept as being of most likely.
7. Hypothesis should be amenable for testing within a reasonable time. One should not use even an excellent hypothesis, if the same cannot be tested in reasonable time and for this reason one cannot spend his/her lifetime in collecting data to be tested.
8. Hypothesis must explain the facts that give rise to need for explanation. This means by using the hypothesis plus other known and accepted generalization, one should be able to deduce the original problem condition. Thus hypothesis must actually explain what it claims to explain; it should have empirical reference.

5.6.2 Types of hypothesis

With reference to their function, there are two types of hypothesis (a) Descriptive hypothesis (b) Relational hypothesis. Another approach is to classify them into (a) Working hypothesis (b) Null hypothesis (c) Statistical hypothesis. Third approach is to divide them on the basis of the level of abstraction. They may be distinguished into three broad categories (1) Simple description (2) Logical derivation, and (3) Abstraction. Accordingly there are three types of hypothesis (a) Common-sense hypothesis (b) Complex hypothesis, and (c) Analytical hypothesis.

But when we test the hypothesis we generally form two types of hypothesis, they are Null hypothesis and Alternative hypothesis. Null hypothesis generally assumes happening of the assumption and alternative hypothesis to define, if it is true or not. There are two types of error occurs when we test the hypothesis (1) type one error, and (2) type two error. Type one error occurs when we reject null hypothesis when it is true, and type two error occurs when we accept null hypothesis but it actually false.



CHECK YOUR PROGRESS

Q.4: What is formulation?

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Q.5: Mention three principle components in the progressive formulation of a problem for research as identified by Merton.

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Q.6: What is hypothesis? Discuss the types of hypothesis.

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Q.7: What types of error occur when hypothesis is tested?

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5.7 RESEARCH DESIGN

An important step of any scientific research is to prepare a research design.Research design is a mapping strategy which is based on sampling techniques. A research design is a logical and systematic plan prepared for directing a research study. It specifies the objective of the study, the methodology of the techniques to be adopted for achieving the objectives. A research design is the arrangement of conditions for collection and analysis of the data in a manner that aims to combine relevance to the research purpose with economy in procedure. The plan is the overall scheme or

program of research. A research design is the program that guides the investigator in the process of collecting, analyzing and interpreting observations. It provides systematic plan of procedure for the researcher to follow.

The above definition gives the essential of a good research design. They are:

1. It is a plan that specifies the objectives of the study and the hypothesis to be tested.
2. It is an outline that specifies the sources and types of information relevant to the research problem.
3. It is a blueprint specifying the methods to be adopted for collecting and analyzing the data.
4. It is a scheme of defining "the domain of generalizability, i.e., whether the obtained information can be generalized to a larger population or to different situations.

5.7.1 Features of a good research design

A good research design is often characterized by objectives like flexibility, appropriate, efficient, economical and so on. Generally a research design, which minimizes bias and maximizes the reliability of the data collected and analyzed, is considered as a good research design. The design that gives the smallest experimental error is supposed to be the best design in many investigations.

A research design appropriate for the particular research problem, usually consider the following factors:

1. The means of obtaining information;
2. The availability and skills of researcher and his staff, if any;
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.

5.7.2 Nature of research design

A research design is indispensable for a research project. However it is not a precise and specific plan like building plan to be followed without deviations, but rather a series of guideposts to keep one going in the right direction. It is a tentative plan which undergoes modifications, as circumstances demand, when the study progresses, new aspects, new conditions and new relationships come to light and insight into the study deepens. For example, the scope of a study may be narrowed down, when it is discovered that certain kinds of data are not available; the sampling method may be modified from 'random sampling with probability proportional to size is not readily available' and so on.

Besides, a research study cannot be as extensive and intensive as the researcher may like it to be. It has to be geared to the availability of data and the cooperation of the information. It has also to kept within the manageable limits, i.e., within the researcher's mental ability to grasp the implications, his competence and the amount of time and other resources available for the purpose.

5.7.3 Classification of research design

There are a number of crucial research choices, various writers advance different classification schemes, some of which are:

1. Experimental, historical and inferential designs (American Marketing Association)
2. Exploratory, descriptive and causal designs (Selltiz, Jahoda, Deutsch and Cook)
3. Experimental, and ex-post facto (Kerlinger)
4. Historical method, and case and clinical studies (Goode and Scates)
5. Sample survey, field studies, experiments in field settings, and laboratory experiments (Festinger and Karz)

6. Exploratory, descriptive and experimental studies (Body and Westfall)
7. Exploratory, descriptive and causal (Green and Tull)
8. Experimental, 'quasi-experimental design' (Nachmias and Nachmias)
9. True experimental, quasi-experimental and non-experimental designs (Smith)
10. Experimental, pre-experimental, quasi-experimental designs and survey Research (Kidder and Judd).

Different research design can be conveniently described if we categorize them as: (1) research design in case of exploratory research studies; (2) research design in case of descriptive and diagnostic research studies, and (3) research design in case of hypothesis-testing research studies.

1. **Research design in case of exploratory research studies:** Exploratory research studies are also termed as formulate research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypothesis from an operational point of view. Generally, the following three methods in the context of research design for such studies are talked about: (a) the survey of concerning literature (b) the experience survey and (c) the analysis of 'insight-stimulating' examples.

   The survey of concerning literature happens to be the most simple and fruitful method of formulating precisely the researcher problem or developing hypothesis. Hypothesis stated by earlier workers may be reviewed and their usefulness be evaluated as a basis for further research. It may also be considered whether the already stated hypothesis suggest new hypothesis.

   Experience survey means the survey of people who have had practical experience with the problem to be studied. The object of such a survey is to obtain insight into the relationship between variable and new ideas relating to the research problem.

Analysis of 'insight-stimulating' example is also a fruitful method for suggesting hypothesis for research. It is particularly suitable in areas where there is little experience to serve as a guide. This method consist of the intensively study of selected instances of the phenomenon in which one is interested.

2. **Research design in case of descriptive and diagnostic research studies:** Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else.
3. **Research design in case of hypothesis-testing research studies:** Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypothesis of causal relationship between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality. Usually experiments meet this requirement. Hence, when we talk of research design in such studies, we often mean the design of experiments.

5.7.4 Preparation of the research design

Planning involve deciding things in advance. Accordingly, the preparation of a research of a plan involves a careful consideration of the following questions and making appropriate decision on them:

1. What the study about?
2. What is the study made?
3. What is its scope?
4. What are the objectives of the study?
5. What are the propositions of the tested?
6. What are the major concepts to be defined operationally?
7. On the basis of what criteria or measurements, the operational definition to be made?

8. When or in what place the study will be conducted?
9. What is the reference period of the study?
10. What kinds of data are needed?
11. What are the sources of data?
12. What is the sample size?
13. What sampling technique can be used?
14. What methods are to be adopted for the data collection?
15. How the data are to be processed?
16. What is the significance of the study?
17. What is the type of report to be prepared?
18. What is the time limit within which whole work should be completed?
19. What is the cost involved?

These questions are to be considered with reference to the researcher's interest, competence, time and other resources, and the requirements of the sponsoring agency, if any. Thus, the considerations which enter into making decisions regarding what, where, when, how much, by what means, constitute a plan of study or a study design.



CHECK YOUR PROGRESS

Q.8: What is research design?

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Q.9: What is the main purpose of exploratory research studies?

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Q.10: What are diagnostic research studies?

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Q.11: What are hypothesis-tested research studies?

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5.8 LET US SUM UP

- A Research Plan is a document written by a researcher that provides a detailed description of the proposed programme. It is a systemic investigation to establish facts or principles or to collect information on a subject.
- A research problem, in general, refers to some difficulty, which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.
- The process of identification of problem for academic research may consist of-(a)selection of discipline,(b) demarcating the broad area or a particular aspect of the selected subject and(c) identifying two or more specific topics in the selected broad area.
- Formulation means translating and transforming the selected research problem topic into a scientifically researchable question. It is concerned with exactly what the research problem is and why is it studies.
- Merton identifies three principle components in the progressive formulation of a problem for research - the originating question (what want and what to know), the rational (why aspect) , and the specifying questions (possible answer to the originating question)
- Hypothesis is one of the important components included in a research plan. Hypothesis is a tentative proposition formulated for empirical testing. It is a declarative statement of combining concepts.
- Hypothesis should state the relationship between variables, if it happens to be a rational hypothesis.
- Hypothesis should be limited in scope and must be specific. A researcher must remember that narrow hypothesis are generally more testable and he should test such hypothesis.
- With reference to their function, there are two types of hypothesis (a) Descriptive hypothesis (b) Relational hypothesis. Another approach is to classify them into (a) Working hypothesis (b) Null hypothesis (c)

Statistical hypothesis. Third approach is to divide them on the basis of the level of abstraction. They may be distinguished into three broad categories (1) Simple description (2) Logical derivation, and (3) Abstraction. Accordingly there are three types of hypothesis (a) Common-sense hypothesis (b) Complex hypothesis, and (c) Analytical hypothesis.

- When we test the hypothesis we generally form two types of hypothesis, they are Null hypothesis and Alternative hypothesis. Null hypothesis generally assumes happening of the assumption and alternative hypothesis to define, if it is true or not. There are two types of error occurs when we test the hypothesis (1) type one error, and (2) type two error. Type one error occurs when we reject null hypothesis when it is true, and type two error occurs when we accept null hypothesis but it actually false.
- Research design is a mapping strategy which is based on sampling techniques. A research design is a logical and systematic plan prepared for directing a research study. It specifies the objective of the study, the methodology of the techniques to be adopted for achieving the objectives.
- Exploratory research studies are also termed as formulate research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypothesis from an operational point of view.
- Descriptive research studies are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else.
- Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypothesis of causal relationship between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality.



5.9 FURTHER READING

1. Fundamentals of Statistics -A.M Goon, M.K Gupta, B. Dasgupta,World Press Pvt Ltd
2. Research Methodology, Methods and Techniques- C. R Kothari,New Age International, New Delhi
3. Statistical Methods - S.P Gupta, Sultan Chand & Sons
4. Sampling Technique - William G. Cochran ,John Wiley, New Delhi



5.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: A Research Plan is a document written by a researcher that provides a detailed description of the proposed programme. It is a systemic investigation to establish facts or principles or to collect information on a subject. The purpose of the research plan is to describe what, why and how of the proposal.

Ans. to Q. No. 2: A research problem, in general, refers to some difficulty, which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.

Ans. to Q. No. 3: The two criteria for selection of a research problem are- internal criteria/factor and external criteria/factor. Internal criteria consist of researcher's interest, researcher's competence and researcher's own resource, viz finance and time. External criteria or factor includes researchability of the problem, its importance and urgency, novelty of the problem, feasibility, facilities, usefulness and social relevance and research personal.

Ans. to Q. No. 4: Formulation means translating and transforming the selected research problem topic into a scientifically researchable question. It is concerned with exactly what the research problem is and why is it studies.

Ans. to Q. No. 5: Merton identifies three principle components in the progressive formulation of a problem for research. They are- (a)The originating question (what want and what to know), (b) The rational (why aspect) and (c)The specifying questions (possible answer to the originating question).

Ans. to Q. No. 6: Hypothesis is a tentative proposition formulated for empirical testing. A hypothesis may be defined as a proposition or a set of propositions set forth as an explanation for the some specified group of phenomenon either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts.

On the basis of function, hypothesis can be divided into (a) Descriptive hypothesis and (b) Relational hypothesis. Hypothesis is also classified into (a) Working hypothesis (b) Null hypothesis and (c) Statistical hypothesis. On the basis of the level of abstraction hypothesis may be distinguished into three broad categories (1) Simple description (2) Logical derivation, and (3) Abstraction. Accordingly there are three types of hypothesis (a) Common-sense hypothesis (b) Complex hypothesis, and (c) Analytical hypothesis.However, when a hypothesis is generally tested ,we generally form two types of hypothesis, they are Null hypothesis and Alternative hypothesis.

Ans. to Q. No. 7: Two types of error occur when we test the hypothesis . They are - (1) type one error, and (2) type two error. Type one error occurs when we reject null hypothesis when it is true, and type two error occurs when we accept null hypothesis but it actually false.

Ans. to Q. No. 8: Research design is a mapping strategy which is based on sampling techniques. A research design is a logical and systematic plan prepared for directing a research study. It specifies the objective of the study, the methodology of the techniques to be adopted for achieving the objectives.

Ans. to Q. No. 9: The main purpose of exploratory research studies is that of formulating a problem for more precise investigation or of

developing the working hypothesis from an operational point of view. Generally, the following three methods in the context of research design for such studies are talked about: (a) the survey of concerning literature (b) the experience survey and (c) the analysis of 'insight-stimulating' examples.

Ans. to Q. No. 10: Diagnostic research studies are those studies that determine the frequency with which something occurs or its association with something else.

Ans. to Q. No. 11: Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypothesis of causal relationship between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality.



5.11 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q 1: What is meaning of a research problem?

Q.2: What is the meaning of hypothesis ?

Q.3: How can a researcher define the objectives of a study ?

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: Identify a research problem and accordingly prepare a research plan clearly stating the different sections.

Q. 2: State the different components of a research problem.

Q. 3: What are the characteristics of hypothesis?

Q. 4: 'An important step of any scientific research is to prepare a research design'- Elucidate the statement with examples.

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UNIT 6: RESEARCH DESIGN

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.2.1 Characteristics of Research Design

6.3 Components of Research Design

6.4 Concepts of Research Design

6.5 Types of Research Design

6.5.1 Exploratory of Formulative Design

6.5.2 Descriptive Research Design

6.5.3 Digonastic Research Design

6.5.4 Experimental Research Design

6.5.4.1 Types of Experimental Design

6.6 Let Us Sum Up

6.7 Further Reading

6.8 Answer to Check your Progress

6.9 Model Questions

6.1 LEARNING OBJECTIVES

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

- know about the meaning of research design and its importance in social research.
- understand the different components and concepts associated with research design.
- understand in detail the different types of research designs and their application.

6.2 INTRODUCTION

The term 'design' means "drawing an outline" or planning or arranging details. It is a process of making decisions before the situation arises in which the decision has to be carried out. 'Research Design' is planning a

strategy of conducting research. It plans as to: what is to be observed, how it is to be observed, how to record observations, how to analyse/interpret observations, and how to generalize . Research design is, thus, a detailed plan of how the goals of research will be achieved.

A research design is the systematic and logical planning for action. It provides direction to research project. In precise, it may be called as a plan for collecting and analysing data in an efficient and relevant manner. It is a blue print and therefore at its best only tentative changes in the design are permitted and are dictated by considerations during the operations of the project. In other words, a research design is not a highly specific plan to be followed without deviation but rather a series of guide-posts to keep one headed in the right direction. Research design has been defined by different social scientists in different terms.

Miller has defined “Designed Research” as “The planned sequence of the entire process involved in conducting a research study.”

According to Selltiz and others, “Research design is a catalogue of the various phases and facts relating to the formulation of a research effort. It is an arrangement of the essential conditions for collection and analysis of data in a form that aims to combine relevance to research purpose with economy in the procedure”.

5.2.1 Characteristics of Research Design

In the field of social sciences the designing of a research study is very complex . Every design has its own strength and weakness and at the same time there is no such thing as a single correct design. Nevertheless a good research design should posses the following characteristics.

- Objectivity: The objectivity of the procedure(either collection of data or scoring of the responses or both) may be judged by the degree of agreement between the final scores assigned to different individuals by more than one independent observer. The more subjective the observation, recording and evaluation

of the response, the less the different observers agree. Therefore any research design should permit the use of measuring instruments which are fairly objective at which every observer or judge seeing a performance arrives precisely. This ensures the objectivity of the collected data to be used for the analysis and findings.

- Reliability: The test retest approach is the most effective measure of reliability as it refers to 'consistency' throught out a series of measurements. Suppose if a respondent gives a response to a question he/she is expected to give the same response to that question whenever he is asked in other form. But if the respondent keeps on changing his/her responses to the same type of questions then the interviewer will be facing a difficulty in considering which of the responses is genuine. The researcher should frame this question in such a way that the respondent cannot but give only one genuine response. Though there are some methods in determining the reliability of the responses given by a respondent like.
- Validity: As in case of reliability, there are a good number of procedures for establishing the validity of test, such as validating the present data against a concurrent criterion or a future criterion or a theory etc. However, any measuring instrument is said to be valid when it measures what it proposes to measure.
- Generalisation: The next important aspect of a good research design is to ensure that the measuring instruments used in a research investigation yield objective, reliable and valid data for 'generalisation' of the findings. It will thus help an investigator in his attempt to generalize the findings, provided he has taken care in defining the population , selecting the sample and using the appropriate statistical analysis while planning his/her research design.



CHECK YOUR PROGRESS

Q.1: What is research design?

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Q.2: Write any two characteristics of a research design?

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6.3 COMPONENTS OF RESEARCH DESIGN

As discussed earlier, Research Design outlines how the research will be carried out. Therefore it addresses itself to certain key issues as mentioned below.

- Title of the study, '…should be brief, precise and project the scope in generalized terms.'
- Statement of the Problem, '…should be unambiguous, precise and the usage should be clear, simple and concise.'
- Review of Previous studies- '…should be a brief survey of a relevant literature in the subject concerned and presented subjectwise. Studies should be reviewed critically and from there further research is called for'
- Definition of Concept or Theoritical Principles involved, '…should be defined in general times and be linked with the study.'
- Coverage and Scope of the Study, '…should consider geographical, temporal and functional dimension.'
- Objectives of the study, '…should explain the main purpose precisely and in the form of question or an explanation to a particular issue.'
- Formulation of Hypothesis, '…should be empirical, conceptually clear, specific, close to things observable and related to the body of theory.'
- Methods of Investigation, '…depends upon the nature of study but researcher should define the methodology and techniques adopted.'

- Sampling design-'…definition of the universe or population, size of the sample and representatives of the sample should be defined.'
- Constructing of Schedule or Questionnaire-'…questions should be in a order or a form. Open ended questions are designed to permit a free response. The questions to be asked should have a direct bearing on the problem, avoiding the personal questions and multiple meaning.'
- Data Collection, '…depends upon the subject matter the unit of enquiry and the scope of the study.'
- Analysis of Data, '…to fulfil the objective or hypothesis the researcher should analyse the data and subject to the appropriate statistical analysis beside tabulation. Tabulation of results in a meaningful way is by itself a technique and an art. The data given in the tables must be in self-explanatory form
- Interpretation of Results-'…researcher should draw inference based on usual test for significance and relate with previous findings, for a wider field of generalization.
- Reporting and Findings: Reporting should be clear, specific, simple and related relating to the objective of the study. Researcher must report what has been discovered to ensure proper directions to other researchers in carrying out of similar researches.'



CHECK YOUR PROGRESS

Q.3: How should be the title of a research be designed?

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Q.4: What should be the Reporting and Findings of a research design like?

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6.4 COMPONENTS OF RESEARCH DESIGN

Before describing the different research design, it will be appropriate to explain the various concepts relating to designs so that these may be easily understood.

- *Dependent and independent variables*: A concept which can take on different quantitative values is called a variable. As such, the concepts like weight, height, income are all examples of variables. Qualitative phenomena (or the attributes) are also quantified on the basis of the presence or absence of the concerning attribute(s). Phenomena which can take on quantitatively different values even in decimal points are called ‘ continuous variable’. But all variables are not continuous, If they can only be, expressed in integer values, they are non-continuous variables or in statistical language discrete variables. Age is an example of continuous variable, but the number of children is an example of non-continuous variable. If one variable depends upon or is a consequence of another variable it is termed as an dependent variable. For instance if we say that height depends upon age, then height is a dependent variable and age is an independent variable Further if in addition to being dependent upon age , height also depends upon individual’s sex , then height is a dependent variable and age and sex are independent variables.
- *Extraneous variable*: Independent variables which are not related to the purpose of the study, but may affect the dependent variable are termed as extraneous variable. Suppose the researcher wants to test the hypothesis that there is a relationship between children’s social studies achievement and their self-concepts. In this case, self-concept is an independent variable and social studies achievement is a dependent variable.
- *Control*: One important characteristic of a good research design is to minimize the influence or effect of extraneous variable(s). The technical term ‘control” is used when we design the study minimizing

the effects of extraneous independent variables. In experimental researches, the term 'control' is used to refer to restrain experimental conditions.

- *Confounded relationship*: When the dependent variable is not free from the influence of extraneous variable(s) the relationship between the dependent and independent variables is said to be confounded by an extraneous variable(s)
- *Research hypothesis*: When a prediction or a hypothesized relationship is to be tested by scientific methods, it is termed as research hypothesis. The research hypothesis is a predictive statement that relates an independent variable to a dependent variable. Usually, a research hypothesis must contain at least one independent and one dependent variable
- *Experimental and non-experimental hypothesis-testing research*: When the purpose of research is to test a research hypothesis, it is termed as hypothesis-testing research. It can be of the experimental design or of the non-experimental design. Research in which the independent variable is manipulated is termed as'experimental hypothesis-testing research'and a research in which an independent variable is not manipulated is called'non-experimental hypothesis-testing research'.
- *Experimental and control groups*: In an experimental hypothesis-testing research when a group is exposed to usual conditions, it is termed as á control group', but when the group is exposed to some novel or special condition it is termed as an experimental group.
- *Treatments*: The different conditions under which experimental and control groups are put are usually called treatments.
- *Experiments*: The process of examining the truth of a statistical hypothesis relating to some research problem is known as experiment.
- *Experimental unit(s)*: The pre-determined plots or the blocks where different treatments are used are known as experimental units. Such experimental units must be selected(defined) very carefully.

6.5 TYPES OF RESEARCH DESIGN

On the basis of Research purpose, research studies may broadly be categorized into four types:

6.5.1 Exploratory or Formulative Design

The main purpose of exploratory research is to gather information which will help in future for formulation of a precise research problem. On the basis of the collected facts the researcher may be able to formulate sound hypothesis for further research. It may also enable the researcher to get himself/herself acquainted with the phenomena which he/she expects to investigate at a later stage. The aim of an exploratory or formulative study may be clarification of concepts, establishing priorities for future research and collection of data about the actual conditions which affect an intended research. An exploratory research employs exploratory design.

- Requirements of Exploratory Design

The essentials for exploratory or formulative design are:

- Review of pertinent literature: While proceeding in the path of research, the researcher has to take help from the work already done by his/her predecessors. By doing so he/she will not only save himself/herself from the problem of trial and error but also minimize the expenditure of his/her energy.
- Experience Survey: Because of the complicated nature of social problems a researcher may not be in a position to collect all the required materials about a particular problem from one place. At times the researcher has to contact the persons who have earned enough experience to understand and analyse the social reactions.
- Analysis of Insight stimulating cases: Analysis of insight stimulating cases includes all those events, incidents and

phenomenan that stimulate the researcher. Such cases invoke in the investigator the thinking required for the formulation of the hypotheses. In this regard the attitude of the investigator, intensity of the case study and integrative power of investigators appear to be very important.

6.5.2 Descriptive Research Design

The purpose of descriptive research design is to describe some event, situation, people, group or community or some phenomenon. Fundamentally it is a fact finding exercise which focuses on relatively far dimensions of a well defined entity, aiming at precise and systematic measurement of some dimensions of a phenomenon. Usually a descriptive design involves detailed numerical descriptions, such as distribution of a population of a community by age, sex, caste or education. The researcher may also take recourse to descriptive design for estimating the proportion of people in a particular geographical locality with respect to their specific view or attitudes.

However the procedure followed in descriptive design is broadly analogous, notwithstanding the differences evinced in their field, formulation of hypothesis, objectives, for treatment of the problem and in matters of field expansion.

6.5.3 Diagonistic Research Design

The diagonistic research design endeavours to find out the relationship between express causes and also suggests ways and means for the solution. Thus the diagonistic studies are concerned with discovering and testing whether certain variables are associated. Such studies may also aim at determining the frequency with which something occurs or the ways in which a phenomena is associated with some other factors.

Diagonistic studies are mostly motivated by hypothesis. A primary description of a problem serves the basis so as to relate the

hypotheses with the source of the problem. Here only those data which form and corroborate the hypotheses are collected. With regards to the objective of diagonistic research design, it is based on such knowledge which can also be motivated or put into practice to find solution of the problem. Therefore it is obvious that the diagonistic design is concerned with both the cause as well as the treatment.

Diagonistic studies seek immediate to timely solution of causal elements. The researcher before going through other references, endeavours to remove and solve the factors and the causes responsible for giving rise to the problem.

The research design of diagonistic studies demands strict adherence to objectivity for elimination of any chances of personal bias or prejudice. Utmost care is taken while taking decisions regarding variables, nature of observation to be made in the field, the type of evidence to be collected and tools of data collection. Simultaneously the research economy should be carefully calculated. Any faulty decision in this regard will result in wastage of time, energy and money.

Usually the first step in such designing is accurate formulation of a research problem wherein the research objectives are precisely stated and principal areas of investigation are properly linked. Otherwise the investigator will find it difficult to ensure the collection of required data in a systematic manner. Simultaneously, the clarification of concepts and the operational definition of the terms should be ensured so as to make them amenable to measurement.

At the next stage, certain decisions regarding collection of data are taken. In this regard, the researcher should always calculate in mind the advantages and disadvantages of the method to be employed and at the same time the nature of research problem, type of data needed, degree of desired accuracy etc. should be considered. Again, while collecting data, efforts should be made to maintain objectivity to the maximum possible extent.

In order to surmount problem of the financial constraints and paucity of time, a representative sample of the research universe should be drawn so as to gather relevant information. A wide range of sampling techniques are prevalent which must be made use of appropriately by the researchers.

At the stage of analysis of data, the researcher must take proper care in placing each item in the appropriate category, tabulating of data, applying statistical computation and so on.

6.5.4 Experimental Design

The concept of experimental design in sociological research refers to systematic study of human relations by making the observations under conditions of control. In the words of Jahoda and Cook, ' an experiment may be considered as a way of organizing the collection of evidence so as to permit one to make inference about the tenability of a hypothesis. According to Chapin, "experiment is simply observation under controlled conditions. When observation alone fails to disclose the factors that operate in a given problem, it is necessary for the scientist to resort to experiment."

In real terms, experimentation is resorted to when it is not possible to solve the problem through observation and general knowledge. The core of the experimental method lies in drawing inferences by observation of human relations under controlled conditions. Since a number of factors are in operation in every complex social situation, the social scientist , while seeking to describe the single causal relation of suppose factor A to factor B, must attempt to create an artificial situation wherein all other factors such as C, D, E etc., are controlled. Such a state is achieved by selecting two groups which are equal in all significant receipts and by choosing either of the groups as 'experimental group and the other as the 'control group' and thereafter exposing the 'experimental group' to the assumed causal variable, while keeping the 'control' group under control. After a specific time period, the two groups are

compared in terms of the 'assumed effect'. The assumed causal variable and the assumed effect are otherwise called the independent variable and dependent variable respectively.

The *three* components of experimental design are: *comparison, manipulation* and *control*.

Through comparison, the correlation between variables is known. It also enables us to demonstrate the association between two or more variables.

Through manipulation the researcher establishes the time order of events. The major evidence which becomes essential to determine the sequence of events is that a change occurs only after the activation of independent variable. In other words the independent variable precedes the dependent variable.

6.5.4.1 Types of Experimental Design

There are numerous ways in which experiments can be done in the field of social sciences. In their work "*Experimental and Quasi-Experimental Designs of Research on Teaching*", Donald T.Cambell and Julian C. Stanley have mentioned more than a hundred ways of conducting experiments which may be designated as experimental design. But from the analytical point of view *seven* broad categories may be mentioned:

a. **After only design**: Among all categories of designs, after only design appears to be the simplest. This consists in measuring the dependent variable only after the experimental subjects have been exposed to the experimental variable. This design is considered more appropriate as an exploratory study than a real experiment.

b. **Before-after design:** As the name suggests, in this design measurement of the dependent variable is taken before as well as after exposure of the subject to the experimental variable, and the difference between the two measurements is taken to be the effect of the experimental variable. For example if the

measured value of the dependent variable before exposure to the subject of the experimental variable is noted as 'A' and its measured value after the exposure of the subject to experimental variable is noted as 'B' then the effect of the experimental variable is taken to be (B-A).

c. **Before-after with control group design**: In this design the research has a control group against which the results of the experimental group are compared. The control group and experimental groups are selected in such a way that both the groups are similar and interchangeable. The control group is measured before as well as after being exposed to the experimental variable. Hence there may hardly be any difference between before and after measurements. But if there is any difference between before and after measurements, it represents the result of uncontrolled variables.

On the other hand the experimental variable is introduced in the experimental group. The difference between before and after measurements in respect of the experimental group is construed as the result of experimental variable as well as the uncontrolled variables. To know the exact effect of the experimental variable, the researcher deducts the difference of the two measurements of the experimental group.

The following notation explains this

	Control Group	Experiment Group
Whether before-measurement is taken ?	Yes (A)	Yes (C)
Whether experimental variable is introduced ?	No	Yes
Whether after-measurement is taken ?	Yes (B)	Yes (D)
Effect of experimental variable	(D-C)-(B-A)	

d. **Four group-six study design:** In this type of design two experimental groups and two control groups are taken. Measurements are made in six cases, i.e. before- measurement and after measurement in respect of the experimental group - 1, and after measurement in experimental group-2, before and after measurement in respect of control group 1; and only after measurement in control group 2.

Before measurements in all the four identical groups will be almost the same. If the before-measurements have no effect on the variable being studied, the two experimental groups should provide the same after-measurements and similarly the two control groups should also give the same after measurements. However the results of the two experimental groups are most likely to be different from the results of the two control groups, if the experimental variable exerts any influence.

(e) **After only with control group design**: This is also known as two group-two study design, which is a modification of the four groups study design. Here the researcher does not study the experimental variable under different conditions. Hence the effect of experimental variable under different conditions. The effect of experimental variable is determined simply by finding out the differences between the after-measurements in respect of experimental and control groups. It happens so because if before-measurements of the experimental group-2 and control group-2 are taken, those are likely to be same due to the identical characteristics of the groups. On this presumption the researcher may very well ignore them.

We can express the design by the following notation

(f) **Ex-post facto design:** In Ex-post facto design the experimental and control groups are selected after the introduction of the experimental variable. Thus, it can be called a variation of the

after-only design. The main advantage of this design is that the subjects are not influenced towards the subject by their knowledge of being tested. It also enables the researcher to introduce the experimental variable according to his/her own will and to control his/her observation.

(g) **Factorial Design:** All categories of experimental designs discussed above are designed to test experimental variables at one level only. But on the other hand the factorial designs enable the experimenter to test two or more variables simultaneously.



CHECK YOUR PROGRESS

Q.5: What is the main purpose of an exploratory or formulative design?

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Q.6: What is descriptive research design?

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Q.7: With what is the Diagnostic research design concerned?

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Q.8: What is Experimental Research Design?

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Q.9: What are the three components of Experimental Research Design?

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Q.10: What is Before-after design of experimental research design?

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6.6 LET US SUM UP

- Dependent and independent variable, Extraneous variable , Control, Confounded relationship etc are some of the important concepts of research design.
- Research design can broadly be classified into four types: Exploratory or Formulative Design, Descriptive Research Design, Diagonistic Research Design and Experimental Research Design
- The main aim of an exploratory study is clarification of concepts, establishing priorities for future research and collection of data about the actual conditions which affect an intended research.
- The main purpose of descriptive design is to describe some event, situation, people, group or community or some phenomena.
- The diagonistic research design endeavours to find out the relationship between causes and suggest ways and means for the solution.
- The core of experimental research design lies in drawing inferences by observation of human relations under conditions of control.
- Experimental Design is to three types.



6.7 FURTHER READING

1. Ackoff, Russell L. (1961). *The Design of Social Research Chicago*: University of Chicago Press.
2. Ghosh, B.N. (1982). *Scientific Methods and Social Research*, New Delhi: Sterling Publishers Pvt.Ltd.



6.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: A Research Design is a plan of action. It is a plan for collecting and analyzing data in an efficient and relevant manner.

Ans. to Q. No. 2: Reliability and Generalisation are any two characteristics of a research design.

Ans. to Q. No. 3: The title of a study should be brief, precise and project the scope in generalized terms.

Ans. to Q. No. 4: The reporting and finding of a study should be clear, specific, simple and directly relating to the objective of the study.

Ans. to Q. No. 5: When a variable depends upon or is a consequence of the other variable it is termed as an independent variable.

Ans. to Q. No. 6: When a prediction or a hypothesized relationship is to be tested by scientific methods, it is termed as research hypothesis.

Ans. to Q. No. 7: The main purpose of exploratory or formulative design is to gather information which will help in future for formulation of a precise research problem.

Ans. to Q. No. 8: A Descriptive Research Design is such a design which describes events, situation, people, group or community or some phenomena.

Ans. to Q. No. 9: The Diagonistic Research design is concerned with the express characteristic and existing social problems.

Ans. to Q. No. 10: Experimental Research design refers to systematic study of human relations by making the observation under conditions of control.

Ans. to Q. No. 11: The three components of Experimental Research design are : comparison, manipulation and control.

Ans. to Q. No. 12: The Before-after experimental design is such a design where measurement of the dependent variable is taken before as well as after exposure of the subject to the experimental variable, and the difference between the two measurements is taken to be the effect of the experimental variable.



6.9 MODEL QUESTIONS

A) Short Questions (Answer within 150 words)

Q. 1: Define Research Design and mention its characteristics.

Q. 2: Differentiate between Dependent and Independent variable.

Q. 3: What are the essentials of an Exploratory or Formulative study?

B) Long Questions (Answer within 300-500 words)

Q. 1: Describe the different components of research design ?

Q. 2: Describe in detail about descriptive research design ?

Q. 3: Define experimental research design and describe its types?

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UNIT 7: RESEARCH TOOLS

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 What is Data?

7.3.1 Types of Data

7.4 Data Collection

7.4.1 Observation

7.4.2 Interview Method

7.4.3 Questionnaire and Schedule

7.4.4 Secondary Data

7.5 Let Us Sum Up

7.6 Further Readings

7.7 Answers to Check Your Progress

7.8 Model Questions

7.1 LEARNING OBJECTIVES

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

- define and identify the various research tools
- explain the methods of data collection
- learn how to form questionnaire and schedule.

7.2 INTRODUCTION

In the previous unit, we learnt about research plan and its contents, we also studied in details about a research problem. In this unit we will learn about the various research tools and their importance in carrying out a research work.

Research tools are research materials that are necessary to perform research. All inventions, discoveries and knowledge can become research tools. Universities and Public Research Institutions have many resources that can be considered as research tools. Research tools are of many kinds

and employs distinctive ways of describing and qualifying the data. Each tool is appropriate for certain sources of data, yielding information of the kind and in the form that would be most effectively used. Some of the research tools used most frequently in the research process are schedule, questionnaire, rating scale and so on. The research tools are mainly used in research process for the collection of data.

7.3 WHAT IS DATA?

Data are facts, figures and other relevant materials, from past and present, serving as a basis for study and analysis. Examples are-

1. The quantity of each material required for a unit of output.
2. The sex, age, social class, religion, income level of respondent in a consumer behaviour study, etc.

7.3.1 Types of Data

Types of Data:

Data may be broadly classified into two categories:

1. Primary data, and
2. Secondary data.

Besides the above two categories, data needed for a social science research may be broadly classified into (a) Data pertaining to human beings (b) Data relating to Organization, and (c) Data pertaining to territorial area.

Personal Data or Data relating to human beings consist of:

(1) Demographic and socio-economic characteristics of individuals: Age, sex, race, social class, religion, marital status, education, occupation, income, family size, location of household, life style…etc.

(2) Behavioural Variables: Attitudes, opinions, awareness, knowledge, practice, intentions, etc.

Organizational data consist of data relating to an origination's origin, ownership, objectives, resources, functions, performance, and growth.

Territorial data consist of data related to geographical characteristics, resources endowment , population occupational pattern , infrastructure , economic structure, degree of development, etc. of spatial division like villages, cities, districts, state and the nation.

Generally, there are two types of data. One is Primary data and the other is secondary data.

7.4 DATA COLLECTION

- **Methods of primary Data collection:** Primary data are those, which are collected afresh and for the first time, and thus happen to be original in character. Method is different from a tool. A method is the way or mode of collecting data, on the other hand, a tool is an instrument used for the method.

The Following are the important methods for collecting data:

(a) Observations

(b) Interviewing

(c) Data collection through questionnaire and schedule

(d) Mail survey

(e) Experimentation

(f) Simulation

(g) Projective

The above methods are discussed briefly as follows:

7.4.1 Observation

Observation involves collection of data technique relating to the selected research by viewing and /or listening. Here the information is sought by way of investigator's own direct observations without asking the respondent. It is especially used in studies relating to Behavioural Science. Observations may be defined as a systematic viewing of a specific phenomenon in its proper settings for the specific purpose of gathering data for a particular study. It include both "seeing" and "hearing".

Characteristics:

(1) It is both physical and mental activity. The attention only focused on data that are pertinent to the study.

(2) Observation is selective. A researcher only observes on the basis of the nature, scope, and objectives of his study as the range of things selected for his/her study.

(3) Observation is purposive and not casual. It is made for the specific purpose of noting things relevant to the study.

(4) It captures the natural and social context in which person's behaviour occurs.

(5) It grasps the significant events and occurrence that affect social relations of the participants.

(6) Observation should be exact and to be based on standardized tools of research such as observation schedule, socio metric scale etc and precision instruments, if any.

Types of observations:

Observations may be classified in different ways. With reference to the investigator's role, it may be classified into (a) non-participants observations, and (b) participants observations. In terms of the mode of observations, it may be classified into (a) direct observations, and (b) indirect observations. With reference to regour of the system adopted, it may be classified into (a) controlled observations, and (b) uncontrolled observation.

- **Participant observations:** In this observation, the observer is a part of the phenomenon or group, which is observed, and he acts both as an observer and a participant.
- **Non-participants observations:** In these methods, the observer stands apart and does not participate in the phenomenon observed. Naturally, there is no emotional involvement on the part of the observer.
- **Direct observations:** This means observation of an event personally by the observer when it takes place. This method is

flexible and allows the observer to see the record subtle aspects of events and behaviour as they occurred.

- **Indirect observations:** This does not involve the physical presence of the observer, and the recording is done by mechanical, photographic or electronic devices, etc, recording customers and employee movement by a special motion picture camera mounted in a departmental store.
- **Controlled observations:** This involves standardization of observational technique and exercise of maximum control over extrinsic and intrinsic variable by adopting experimental design and systematically recording observations.
- **Uncontrolled observations:** This does not involve control over extrinsic and intrinsic variables.
- **Planning observations:** It is used for proper planning.

Advantages:

(1) The main virtue of observation is its directness. It makes it possible to study behaviour as it occurs.

(2) Data collected by observations may describe the observed phenomena as they occurred in their natural settings.

(3) It is more suitable for studying subjects, which are unable to articulate meaningfully, e.g., studies of children, tribal, animals, birds etc.

(4) Observations improve the opportunities for analyzing the contextual background of behaviour. Furthermore, verbal resorts can be validated and compared with behaviour through observations.

(5) Observations make it possible to capture the whole event as it occurs.

Disadvantages:

(1) Observation is of non-use for studying past events or activities. One has to depend upon documents of narrations by people for studying such things.

(2) It is not suitable for studying opinions and attitudes.

(3) Observations possess difficulties in obtaining a representative sample. For interviewing and mailing methods, the selection of a random sampling can be readily ensured. But in observation, people of all types do not make the sample a random one.

(4) Observations cannot be used as and when the researcher finds it convenient to use it. She/He has to wait for the event to occur.

(5) Observation is a slow and expensive process, requiring human observers and/or costly surveillance equipments.



CHECK YOUR PROGRESS

Q.1: What is data? How many types of data are there?

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Q.2: What is observation method?

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Q.3: Define the non participant observation method.

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Q.4: Name one disadvantage of observation method.

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7.4.2 Interview Method

Interview involves face-to face conversation between the investigator and respondent. This method of collecting data involves presentation of oral or verbal stimuli and reply in terms of oral or verbal responses. This method can be used through personal interviews, and, if possible, through telephone interviews.

- **Personal interview:** Personal interview methods requires a person known as the interviewer asking questions generally in face-to-face contact with the other person or persons (at times, the interviewee may also ask certain question and the interviewer responds to these, but usually the interviewer initiates the interview and collects the information). This sort of interview can be direct personal investigation or indirect oral investigation. The interview is usually carried out in a structured way. The structured way involves the use of a set of predetermined questions and of highly standardized techniques of recording. On the other hand, unstructured interviews are characterized by a flexibility of approach to questioning. Unstructured interviews do not follow a system of predetermined questions and standardized techniques recording information.

  There are another types of interviews, viz, focused interview, clinical interview, and the non-directive interview. Focused interview is meant to focus attention on the given experience of respondent and its effects. Under it, the interviewer has the freedom to decide the manner and sequence in which the questions would be asked and has also the freedom to explore reasons and motives. The clinical interview is concerned with broad underlying feelings or motivations or with the course of individual's life experience. The method of eliciting information under it, is generally left to the interviewer's discretion. In case of non-directive interview, the interviewer's function is simply to encourage the respondent to talk about the given topic with a bare minimum of direct questioning. The interviewer often acts as a catalyst to a comprehensive expression of the respondents' feeling and beliefs, and of the frame of reference within which such feeling and beliefs take on personal significance.

- **Telephone interview:** This method of collecting information consists in contacting respondents on telephone itself. Interviewing may be used either as a main method or a

supplementary one in studies of persons. Interviewing is the only suitable method for gathering information from illiterate or less educated respondent. It is useful for collecting a wide range of data from fractural demographic data to highly personal and intimate information relating to person's opinions, attitudes, values, beliefs, past experience and future intentions. Interview is often superior to other data-gathering methods. The chief merits of such a system are:

- It is more flexible in comparison to mailing method.
- It is faster than other methods i.e., a quick way of obtaining information.
- It is cheaper than personal interviewing method; here the cost per response is relatively low.
- Recall is easy; callbacks are simple and economical.
- Interviewer can explain requirements more easily.
- At times, access can be gained to respondents who otherwise cannot be contacted for one reason or the other.
- No field staff is required.

- **Characteristics:** Interviewing as a method of data collection has certain characteristics. They are:
  - The participants - the interviewer and the respondent - are strangers. Here the investigator has to get himself introduced to the respondent in an appropriate manner.
  - The relationship between the participants is a transitory one. It has a fixed beginning and termination points. The interview proper is a fleeting momentary experience for them.
  - Interview is not a mere casual controversational exchange, but a conversation with specific purpose, viz., obtaining information relating to a study.
  - Interview is a mode of obtaining verbal answers to questions put verbally.

- The interaction between interviewer and the respondent need not necessarily be on face-to-face basis, because the interview can be conducted over the telephone also.
- Although the interview is usually a conversation between two persons, it needs not to be limited to a single respondent. It can also conducted with the family members, or a group of children or a group of customers, depending on the requirement of the study.
- The investigator records information furnished by the respondent in the interview.
- Interview is an interracial process.

- **Types of interview:** The interview can be classified into:
  - Structured or directive interview
  - Unstructured or non directive interview
  - Focused interview
  - Clinical interview, and,
  - Depth interview.

- **Evaluation of interview:**

Advantages: There are several real advantages of personal interview

Firstly, the greatest value of this method is the depth and detail of information that can be secured. When used with a well-convinced schedule, an interviewer can obtain a great deal of information.

Secondly, the interviewer can do more things to improve the percentage of responses and the quality of information received than that with other methods. He can note the conditions of the interviewer situation, and adopt appropriate approaches to overcome such problems as the respondents unwillingness, incorrect understanding of questions etc,.

Thirdly, the interviewer can gather other supplement information like economic level, living conditions, etc., through observations of the respondent's environment.

Fourthly, the interviewer can use special scoring devices, visual materials, and the like in order to improve the quality of interviewing.

Fifthly, the accuracy and dependability of the answer given by the respondent can be checked by observation and probing.

Lastly, interview is flexible and adoptable to individual situations. Even more control can be exercised over the interview situation.

- **Limitations: Interview is not free from limitations:**
  - Its greatest drawback is that it is costly, both in money and time.
  - The interview results are often adversely affected by the interviewer's mode of asking questions and interactions, and incorrect recording and also by the respondent's faulty preparation, faulty memory etc,.
  - Certain type of personal and financial information may be refused in face-to-face interviews. Such information might be supplied more willingly and through mail questionnaires.
  - Interview possesses the problem of recording information obtained from respondents. No full proof system is available. Note taking is invariably distracting both interviewer and respondent and mislead the conversation
  - Interview calls highly skilled interviewers. The availability of such person is limited and training of interviewer is often costlier.

7.4.3 Questionnaire and Schedule

This method of data collection is quite popular, particularly in case of big enquiries. It is being adopted by private individuals, research workers, private and public organizations, and even by governments. In this method a questionnaire is sent (usually by post) to the persons concerned with a request to answer the questions and return the questionnaire. A questionnaire consists of a number

of questions printed or typed in a definite order on a form or set of forms. The questionnaire is mailed to respondents who are expected to read and understand the questions and write down the reply in the space meant for the purpose in the questionnaire itself. The respondents have to answer the questions on their own.

Merits of this method:

(1) There is low cost even when the universe is large.

(2) It is free from basis of interviewer; answers are respondent's own words.

(3) Respondent have adequate time to give well thought out answer.

(4) Respondent who are not approachable, can also be reached conveniently.

(5) Large samples can be made use of and the results can be made more dependable and reliable.

Demerits of this method:

(1) Low rate of return of the duly filled in questionnaire; bias due to non-response is often indeterminate.

(2) It can be used only when respondents are educated and cooperating.

(3) The control over questionnaire may be lost once it is sent.

(4) There is inbuilt inflexibility because of the difficulty of amending the approach once questionnaires have been dispatched.

(5) There is also the possibility of ambiguous replies or omission of replies to certain questions; interpretation of omissions is difficulties.

(6) It is difficult to know whether the willing respondents are truly representative.

(7) The method is likely to be the slowest of all.

Before using this method, it is always advisable to conduct 'pilot study' for testing the questionnaire. For a big enquiry, the significance of pilot survey is felt very much. Pilot survey is in fact the replica and

rehearsal of the main survey. Such a survey, being conducted by experts, brings to the light the weaknesses of the questionnaire and also of the survey techniques.

Questionnaire is the heart of the survey operation so the questionnaire must be constructed very carefully. Researcher should follow the three main aspects of a questionnaire mentioned bellow.

1. **General form:** The questionnaire may be structured or non-structured. Structured questionnaire are those questionnaires in which there are definite, concrete, and pre- determined questions. The questions are presented with exactly the same wording and in the same order to all respondents. Report is taken to this sort of standardization to ensure the reply to the same set of questions. The form of question either may be closed or open, decided earlier. When these characteristics are not present in a questionnaire, it can be termed as unstructured questionnaire.
2. **Question sequence:** To make questionnaire effective and to ensure the quality of the answer, a researcher pay attention to the questions sequence in preparing the questionnaire. The first few questions are particularly important because they are likely to influence the attitude of the respondent and seeking their desired cooperation.
3. **Question formulation and wording:** The researcher should note that the questions must be very clear, because any sort of misunderstanding can do irreparable harm to a survey. Question should be constructed with a view to their forming logical part of a well thought out tabulation plan. In general, all questions should meet the following standards— (a) should be easily understood; (b) should be simple i.e., should convey only one thought at a time; (c) should be concrete and should conform as much as possible to the respondent's way of thinking. Concerning the form of questions, we can talk about principal forms, viz., multiple choice questions and open-ended questions.

4. **Essentials of a good questionnaire:** To be successful, the questionnaire should be comparatively short and simple i.e., the size of the questionnaire should be kept to minimum. Question should be proceeds in logical sequence moving from easy to more difficult. Personal and intimate questions should be to kept the ends. The questions should be in dichotomous, multiple choice, or open ended. Technical term should be avoided, etc. and the questionnaire should be formed on regard of time, financial resources, and with regards to the respondents reliability to answer.

A questionnaire looks like the following form:

HOUSEHOLD SCHEDULE

1. Name of the District:
2. a) Name of the Village:

b) Name of the Panchayat:

c) Name of the Development Block:

3. Name of the nearby Town and distance from the village
4. Name of the respondent:
5. Phone no.:
6. Age:
7. Occupation:
8. Educational Qualification:
9. Name of the Head of the family:
10. Caste :
11. Information about other members of household

No	Name	Relation with the head	Occupation	Age	Sex	Educational qualification (years of schooling)	Monthly income

12. Do you own or rent your home?

(a) Own (b) Rent

(c) Constructed under any policy of government like Indira Awas Yojana

9. Sources of drinking water

(a) Tube well (b) Pump

(c) River (d) Pond

(e) Government water supply (f) Others

(10) Sources of light

(a) Kerosene (b) Solar system (c) Electricity

(11) Do you own the following:

(a) Motor cycle (b) Cycle (c) T.V

(d) Radio (e) Land phone (f) News paper

The above is one example of how one can prepare a questionnaire for the survey in various research study. The other questions follow with regard to the subject matter of the research study.



CHECK YOUR PROGRESS

Q.5: What is personal interview?

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Q.6: What is a questionnaire?

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Q.7: Mention one demerit of questionnaire method.

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- **Schedule:** This method of data collection is very much like the collection of data through questionnaire, with little difference, which lies in the fact that schedules are being filled in by the

enumerator who is specially appointed for the purpose. These enumerators along with schedules, go to the respondent, put to them questions from the pro-forma in the order the questions are listed and record the replies in the space meant for the same in the Performa. In some situations, the schedule may be handed over to respondents and enumerators may help them in recording their answer to various questions in the said schedule. Enumerators explain the main aspects of the study, which help to know about the implications of the particular questions.

In these methods, the enumerator should be trained to do their job well and scope of the investigation should be explained to them thoroughly so that they may well understand the implications of different questions put in the schedule.

This method of data collection is very useful in extensive enquiries and can lead to fairly reliable results. It is however, very expensive and is usually appointed in investigations conducted by governmental agencies or by some big organizations. e.g. population census all over the world.

Some other methods of data collection are given bellow:

- **Mailing:** Mailing is used for collecting data by getting questionnaires completed by the respondent. This method involves sending questionnaires to the respondents with a request to complete them and return them by post.
- **Experimentation:** Experimentation involve in a study of independent variables under controlled conditions. Experiment may be conducted in a laboratory or in field in natural settings.
- **Simulation:** Simulation involves creation of an artificial situation similar to the actual life situation. It is a theoretical model of elements, relations and processes which symbolized some reference system, e.g., the flow of money in the economic system may be simulated in operating model consist of a set of pipes through which liquid moves.

- **Projective Method**: It aims at drawing inference on the characteristics of a respondent by presenting to them stimuli. The technique involves presentation of ambiguous stimuli to the respondents for interpretation. In doing so, the respondents reveal their inner characteristics. The stimuli may be a picture, a photograph, an inkbottle or incomplete sentence. The basic assumption of the projective method is that a person project his own thought, Ideas and attributes are when s/he perceives and responds to ambiguous or unstructured stimulus materials. Thus persons unconscious operations of the mind are brought to a conscious level in a disguised and projected form, and the person project his inner characteristics.
- **Panel method**: The panel method is the method of data collection, by which data is collected from the same sample respondents at intervals either by mail or by personal interview. This is used for longitudinal studies on economic conditions, expenditure pattern, consumer behaviour, recreational pattern, effectiveness of advertisement, etc.
- **Sociometry**: Sociometry is a method for discovering, describing, and evaluating social status, structure, and development through measuring the extent of acceptance and rejection between individuals in groups.
- **Content analysis:** Content analysis is a research technique for making inference by objectively and systematically identifying specified characteristics of content of document. This is a method for data collection and analysis. Content analysis is a research tool specially focused on the actual content. It is used to determine the presence of certain words, concepts, themes, characters or sentences within texts and to quantify this presence in an objective manner.
- **Warranty cards**: Warranty cards are usually postal sized cards, which are used by dealers of consumer durables to collect information regarding their product.

- **Distributors or store audits**: Distributors or store audits are performed by distributors as well as manufactures and their salesmen and use of such information to market size, market share, seasonal purchasing pattern, etc.
- **Pantry audits:** Pantry audits technique is used to estimate consumption of the baskets of goods at the consumer level. In this type of audit, the investigator collects an inventory of types, quantities and prices of commodities consumed.
- **Use of mechanical devices**: The use of mechanical devices has been widely made to collect information by way of indirect means. Eye camera, motion picture camera and audiometer are the principle devices so far developed and commonly used by modern big business houses, mostly in the developed world for the purpose of collecting the required information.

7.4.4 Secondary Data

Secondary means data are already available, i. e., they refer to the data which are already been collected and analyzed by someone else. When researcher utilized the data, then they have to look into various sources. There are many problems that are usually associated with the collection of original data. The secondary data may be available in: (a) various publications of central, state, and local government; (b) various publications of foreign government and various organizations; (c) technical and trade journals; (d) books, magazines, newspapers; etc,.

By using secondary data, researcher must see that they possess following characteristics:

1. **Reliability of data:** The reliability can be tested by finding out such things about the said data: (a) who collected the data? (b) what were the sources of the data? (c) were they collected by using proper method? (d) at what time they were collected? (e) was there any bias of the complier? (f) what level of accuracy was desired?(g) what it achieved?

2. **Suitability of the data:** The data must be suitable for the researcher. Because the data are suitable for one enquiry may not necessarily found suitable in another enquiry. Hence, if the available data are found to be unsuitable, they should not be used by the researcher.
3. **Adequacy of the data:** If the level of accuracy of data is found inadequate for the purpose of present enquiry, they will be considered as inadequate and should not be used by the researcher. The data will also be considered inadequate, if they are related to an area which is either narrow or wider than the area of the present enquiry.

Uses:

The secondary data may be used in three ways by a researcher:

(1) Some specific information from secondary sources may be used for reference purpose. For example, the general statistical information on the number of cooperative credit societies in the country, their coverage of villages, towns, may be taken from the published reports and quoted as a background in the study on the evaluation of performance of cooperative credit societies in a selected district.

(2) Secondary data may be used as a benchmark against which the findings of a researcher may be tested, e.g. the findings of local and regional survey may be compared with the national average.

(3) Secondary data may be used as the sole source of information for research project. Such studies as securities market behaviour, financial analysis of companies, and the like depend primarily on secondary data.

Advantages:

1. Secondary data, if available, can be secured quickly and cheaply. Once their source documents and reports are located, collection of data is just as a matter of deskwork.

2. Wider geographical area and longer reference period may be covered without much cost. Thus the use of secondary data extends the researcher's space and time reach.
3. The use of secondary data broadens the database from which scientific generalization can be made. This is specially so when data from several environmental and cultural setting are required for the study.
4. The uses of secondary data enable a researcher to verify the findings based on primary data. It readily meets the need for empirical support. The researcher need not wait the time when additional primary data can be collected.

Disadvantages:

The use of secondary data has its own limitations:

1. The most important limitation is that available data may not meet our specific research needs. The definitions adopted by those who collected those data may be different; unit of measure may not match; and time period may also be different.
2. The available data may not be as accurate as desired. To assess their accuracy, we need to know how the data were collected.
3. The secondary data are not up-to-date and become obsolete when they appear in print, because of time lag in producing them. For example; population census data are published two or three years later after compilation and no new figure will be available for another ten years.
4. Finally information about the whereabouts, the sources may not be available to all social scientists. Even if the location of source is known, the accessibility depends on proximity.

Selection of appropriate method for data collection:

(1) **Nature, scope and object of enquiry:** The method selected by the researcher should be such that it suits type of enquiry that is to be conducted.

(2) **Availability of funds:** Availability of funds for the research project determines to a large extent the method to be used for the collection of data.If the fund is limited, then we have to use cheaper method and vice-versa.

(3) **Time factor:** Availability of time has also to be taken into account in deciding a particular method of data collection. Some methods take relatively more time whereas other takes shorter duration. The time of disposal of the researcher, thus, affect the selection of the methods.

(4) **Precision required:** Precision required is yet another important factor to be consider at the time of selecting the method of data collection.



CHECK YOUR PROGRESS

Q.8: What is schedule?

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Q.9: What is sociometry?

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Q.10: Give one example of secondary data.

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Q.11: Give one advantage of secondary data.

.....

.....



7.5 LET US SUM UP

- Research tools are research materials that are necessary to perform research. All inventions, discoveries and knowledge can become research tools. Primary data are those, which are collected afresh

and for the first time, and thus happen to be original in character. Observation involves collection of data technique relating to the selected research by viewing and /or listening.

- A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms. Mailing is used for collecting data by getting questionnaires completed by the respondent. This method involves sending questionnaires to the respondents with a request to complete them and return them by post. Secondary means data are already available, i. e., they refer to the data which are already been collected and analyzed by someone else. When researcher utilized the data, then they have to look into various sources.



7.6 FURTHER READING

1. A Handbook of Media and Communication Research: Qualitative and Quantitative Methodology, Klaus Bruhn Jensen. Routledge, 2002
2. Mass Media Research: An Introduction, Roger D. Wimmer and Joseph R. Dominick. Cengage Learning, 2006



7.7 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Data are facts, figures and other relevant materials, from past and present, serving as a basis for study and analysis. Data may be broadly classified into two categories: Primary data and Secondary data. Besides the above two categories, data needed for a social science research may be broadly classified into (a) Data pertaining to human beings (b) Data relating to Organization, and (c) Data pertaining to territorial area.

Ans. to Q. No. 2: Observation involves collection of data technique relating to the selected research by viewing and /or listening.

Ans. to Q. No. 3: The observer stands apart and does not participate in the phenomenon observed. Naturally, there is no emotional involvement on the part of the observer.

Ans. to Q. No. 4: Observations cannot be used as and when the researcher finds it convenient to use it. S/He has to wait for the event to occur.

Ans. to Q. No. 5: Personal interview methods requires a person known as the interviewer asking questions generally face-to face contact to the other person or persons.

Ans. to Q. No. 6: A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms.

Ans. to Q. No. 7: It can be used only when respondents are educated and cooperating.

Ans. to Q. No. 8: This method of data collection is very much like the collection of data through questionnaire, with little difference, which lies in the fact that schedules are being filled in by the enumerator who is specially appointed for the purpose.

Ans. to Q. No. 9: Sociometry is a method for discovering, describing, and evaluating social status, structure, and development through measuring the extent of acceptance and rejection between individuals in groups.

Ans. to Q. No. 10: The general statistical information on the number of cooperative credit societies in the country, their coverage of villages, towns.

Ans. to Q. No. 11: Secondary data, if available, can be secured quickly and cheaply. Once their source documents and reports are located, collection of data is just as a matter of deskwork.



7.8 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q. 1: What is the importance of research tools in a communication research?

Q. 2: What is data?

Q.3: What is the importance of data in a research process?

Q. 4: Explain primary and secondary data with suitable examples.

Q. 5: Mention five methods of data collection. Explain any one of them.

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: Is observation method of research suitable for a communication process? How?

Q. 2: What are the advantages of interview method?

Q. 3: Construct a questionnaire including all necessary details for a research topic of your choice.

Q. 4: Discuss the conditions to be kept in mind while selecting an appropriate method for data collection in a research.

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UNIT 8: SAMPLING

UNIT STRUCTURE

8.1 Learning Objectives
8.2 Introduction
8.3 Census and Sample
8.4 Advantages of Sampling
8.5 Parameters and Statistic
8.6 Sample Size
8.7 Sample Design and Sampling Methods
8.8 Sampling and Non-sampling Error
8.9 Let Us Sum Up
8.10 Further Readings
8.11 Answers to Check Your Progress
8.12 Model Questions

8.1 LEARNING OBJECTIVES

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

- discuss the ideas of sample and sampling methods and advantages of sampling
- distinguish various types of sample and appreciate their utility
- describe the various types of errors involved in sampling theory and their role
- explain how appropriate sample size is obtained, and
- analyze how a representative sample can be drawn.

8.2 INTRODUCTION

In the previous unit you studied about the various research tools and their importance in carrying out a research work.In this unit, you will be introduced to one of the vital components of research, i.e., sampling. Here, the concepts of census, sample, sample size, sampling methods would be explained along with the types of samples and sampling errors. And in the next unit, you would be learning about research data.

Sampling is an essential component in the process of making statistical generalisation. For any given study, the total number of units to be studied taken together is called population or universe. For instance, if somebody wishes to study the "impact of media on youths" where youths are typically defined as all individuals within the age of 21 to 35 years, then all youths in the specific age group will constitute the population or universe of the study. It may, however, be noted that population of a study needs to be considered very carefully. For all practical purposes, population should be considered in a way so that sampling becomes feasible. For example, if someone wants to "study reasons for dropout in primary schools" then all primary schools should constitute the population rather than all children who dropped out since the former is practically advantageous than the latter for the purpose of sampling.

Given a population so defined, the researcher may consider either all units of the population in his/her study or some selected few thereof for making conclusions about the all. When the researcher decides to study only a selected few units instead of all units of the population then she has to conclude for all based on information received from a few. The process of making such conclusions about all based on information from a few is called statistical generalisation.

Two things are to be noted here. One, the statistical generalisation is about making 'safe guesses' about the population regarding the attribute under study based on information obtained from some selected units thereof. Second, any 'safe guess' kind of statement will invariably contain some element of error. The scientific research does not and cannot remain oblivious to this element of error. Rather it explicitly admits and accounts for it. The difference between the astronomy and astrology is precisely this - the former is science since it is truthful pursuance of knowledge and acknowledges the probability of making errors, hence called science; while the latter tries to hide all errors and hence, is hardly treated as science.

The sampling, therefore, refers to the process by which safe conclusions or valid inferences about the population are scientifically obtained by explicitly accounting for potential errors involved based on a few selected units of the population known as sample. As we will see below, theory of

sampling deals with how a safe conclusion can be made by minimising the potential errors involved in the whole process of sampling. It, thus, includes two basic issues a) how many sample units should be sufficient for making a safe conclusion i.e. the issue of sample size, and b) once size is known, how those units are to be selected from the population which would represent the population in the most efficient way i.e. the issue of representation. We will take up these two issues systematically. But before that, let us try to understand couple of elementary concepts useful for proceeding further.

8.3 CENSUS AND SAMPLE

As has been pointed out earlier, population is the larger set of study units from which samples are drawn. More specifically, in statistics population is the aggregate of all objects or units under the study. Note that a population can be of two types - finite and infinite. When the population has some known counts of units or objects it is called a finite population. For example students in a college, population of a country, number of accidents occurred in a day, etc. On the other hand, if population consists of units or objects with not known counts, it is termed as infinite population. For instance, number of stars in the sky, population of natural numbers etc. Also note that a population can well be hypothetical, such as number throws of coin say 100 times. In any case, if all units of the population are brought under the study then it is called census or complete enumeration. In census method there is no scope for error since conclusions are made on the basis of all the units under the study. Thus it is the most reliable method of making conclusions. However, the census method possesses some obvious limitations. In the first place census method is highly time consuming and labour intensive. Secondly, it is also not cost effective. Thirdly, the method cannot be applied in case the population happens to be infinite. Still, there are certain specific situations when census method is preferred. For example, when population is of finite type and when information from all units is necessary there is no alternative to census method. Such method becomes absolutely necessary for quality control assessments of industrial production so that no unit is passed onto market with manufacturing defects.

Contrary to the census method, sample study relies on a finite subset of population and then tries to generalise the results for the entire population. It may be noted that like population, samples can also be of different types. Essentially, a sample can be either subjective or objective. The subjective sample is based on individual's judgement or discretion. The main difficulty with subjective sample is that the sampler is ignorant of the degree of representative-ness of his/her sample and the accuracy of the final estimate. When sample is drawn by some fixed, definite rule which is independent of individual judgement or discretion - it is called objective sample. Such objective samples can be of three different types - probability samples, non-probability samples and mixed samples. In probability samples, there is a definite probability attached to it. For instance, as we will see later, samples drawn with equality probability of selection is an example of probability sample. In non-probability samples although these is fixed rule, there is no definite probability associated. For instance a sample selected by the rule - every 10th person will be selected is an example of typical non-probability sample. When a sample is drawn partly using definite probability and partly by fixed non-probabilistic rule - then it is called mixed sample. Whatever be the type of sample, there are specific advantages of sampling which we now wish to discuss.

8.4 ADVANTAGES OF SAMPLING

Sampling, when carried out effectively and efficiently, offers several advantages over the method of census or complete enumeration. In the first place, sample allows a reduction in cost both in terms of money and in terms of engagement of man-hours. Faced with limited physical and financial resources sample can serve as the most useful method. Secondly, in sample better quality man power can be engaged for detail investigation, which is otherwise not possible for census. Sample, therefore, enhanced the focus and scope of the study. Thirdly, even if the population is of infinite type beyond the scope of census, the sample can still be drawn and the population can be brought under the study. Fourthly, sample can produce reliable results for the unknown population at higher administrative

conveniences. However, reliability of sample results depends heavily on the approach and sampling design. The sampling, therefore, is both an art and a science.

8.5 PARAMETERS AND STATISTIC

At this stage, we need to introduce two more concepts - parameters and statistic (not statistics). When we study population characteristics, attributes, features we think of certain statistical measures or constants of these characteristics, attributes and features such as averages, dispersions. The statistical constants of the study attributes in population are known as parameters. Since sample is drawn from the population, there will be similar statistical constants viz. mean, variance etc. for the characteristics, attributes of the sample. The statistical constants obtained in sample are known as statistic (not statistics). Technically, therefore, a population parameter is estimated on the basis of sample statistic, and this process is called sampling. Clearly, value of parameter is dependent on all population units, that of statistic vary according to changes in the sample values.

Now we will proceed to discuss the two fundamental issues of sampling theory - sample size and sample selection.

8.6 SAMPLE SIZE

It has been already pointed out that sampling theory is all about making safe inferences regarding the unknown population. Note that when we try to generalise we do not claim that the population result will be exactly same as the sample results. We actually mean that population results will be somewhat like the sample results. So as long we do not take into account all the units in the population, there is always going to be some difference between the sample and population results. It is important to understand that statistics can not eliminate this error, but can only honestly make it explicit. When we try to make generalisation, we would like to have this error as minimum as possible. To understand the underlying mechanics of sampling theory we need to play with the possible errors.

Let us try to play with our error. Suppose that we have found a person whose height is 5.8 feet. Based on this single information, can we generalise about the possible height of all persons in the population? Well, we can; but the error in this case will be too large. This is because many heights will appear to be probable in the population! Suppose we take a few more persons' height as, say, 4.6, 5.6, 5.4, 5.8 and 5.10. Now the average height 5.3 will suggest that there is a fair bit of possibility that population height will be somewhat near 5.3 feet. However, there is going to be still a difference i.e. error. Point here is that with availability of more and more information, possibilities become less and less. So, clearly, there is a relationship between the sample size i.e. number of sample units considered and the error viz. more is the size less will be the error.

Next consider the fact that a population can generate several samples. For example, if suppose we have 100 units in the population from which we want to sample only 10, there can be 10 distinct samples. Now if one is interested in finding a specific population attribute say M (i.e. parameter), it is possible to make guess about it from 10 sample means (i.e. statistic). If we consider these 10 sample statistic to be m1, m2, m3, ….m10, then this distribution of sample attribute is called sampling distribution of the statistic m. Clearly in our case, any measure will, thus, constitute a series of 10. If we consider say average we will have 10 averages for 10 possible samples. For making safe generalisation, one would require that these measures should be equal, or at least should not very widely. Can you see the point in the argument? Consider the case when all 10 samples produces same statistic, then we can be absolutely sure about the parameter since, if somebody else wishes to verify the result, he/she will get the same result and therefore, we are absolutely safe in making conclusion about the population parameter, which is simply equal to the sample statistic. Statistically, the variation in the distribution of any sample statistic is known as standard error (SE). Essentially, requirement of making safe generalisation is then SE should be the minimum - if not equal to 0.

However, since one would collect only one sample the standard error is approximated theoretically by the following formula

$$SE = \frac{\sigma}{\sqrt{n}}$$

Here is the standard deviations of the sample units and n is the sample size. This formula is the key in determining sample sizes. It indicates many significant aspects of sample. First, it says that SE and standard deviation (i.e. average variability) of sample units are directly related that is increase in one would tend to increase in the other. If the sample units show higher variability within themselves we might have a problem in safe generalisation. Second, the sample size and SE are indirectly related that is increase in one would tend to decrease in the other. Therefore, if we want to reduce the error we should have a greater sample size. Third, this notwithstanding, note the square root over the sample size. This means that although increase in sample size would produce lesser error, because of the square root above it very large increase will have only marginal effect on the improvement in error. Getting the standard deviation before hand is not possible though. It is suggested, therefore, that one would conduct a pilot test i.e. pre-test to obtain a possible standard deviation. Once we have the value of we can take a predefined chance of error in generalisation and put these values to the above formula to get the optimal sample size. In practice, we can have plenty of sample size formula, but this hold the key.

In fact, all sample size formula is based on this fundamental relation amongst the sample size, standard error with some more assumptions. Consider the following example for explanations.

Example:

From a pilot survey it is found that sample standard deviation of the study attribute is 15. What should be the sample size for making conclusion with a standard error of 1.5? How much more units have to be sampled if one attempts to make the SE half of 1.5? What does this suggest? Further, how can one draw the inference on the basis of this sample?

Solution:

Fundamental relation amongst the SE, SD and sample size is given by

$$SE = \frac{\sigma}{\sqrt{n}}$$

Now for SE=1.5 and =15, the above formula will give n = 100.

From the sample formula for SE=0.75 (i.e. half of 1.5) and =15, the sample size n needs to be = 400.

This means that for reducing error by 0.75 one would need 300 more units in the sample. This means that in order to improve small accuracy, a large no of units are needed to be sampled. [Also note that for improving accuracy level by 0.1, one has to sample at least 115 units. Therefore, whether one takes 100 and 112 units in the sample, does not really make any difference!]

The results will be used for inferences along with the associated standard error. For instance, if 100 sample units give an estimate of say, 11 - then population parameter is not to be treated as 11 but in the neighbourhood of 11. The neighbourhood is constructed as SE (i.e.1.5). This means this sample will be suggesting that population parameter will lie between 9.5 and 12.5. If SE is taken as 0.75 and 400 unit is sampled to obtain sample result 11, then parameter will be estimated within a lesser interval viz. 10.25 to 11.75, hence precision will be more in the latter case.

8.7 SAMPLE DESIGN AND SAMPLING METHODS

Once the sample size issue is resolved, next comes the issue of representative selection. It is not very hard to see that the whole issue of representation is based on two properties of sample - viz. randomness and proportionality. Consider any selection which is completely unbiased (i.e. fair). This simply means that getting selected is a simple game of chance or speaking more statistically the probability and not a matter of individual whims and fancies. When we allow probability or chance to

decide whether or not a unit is to be selected to sample without any prejudice than the sample provides a fairly representation of the population. Sample Design technically refers to the formal scheme of probability by which a sample is being selected. Notwithstanding the fairness, it is also possible to miss out adequate representation. It is possible sometime to have attributes in population to be in specific proportions. It is therefore, becomes imperative sometimes that the same proportion is reflected in the sample. When both of these properties get fulfilled we can have a representative sample for any given population. There are many sampling (i.e. doing sample) methods which try to accommodate these two properties in their own ways.

Most widely used probability sampling is the simple random sampling. Here we allow all units in the population the same probability of getting selected. Although apparently looks pretty easy, this method is particularly difficult if we do not have a complete list of all the population units. If the population can be divided into segments based on some characteristics and we expect that these characteristics have some systematic relations in the result under the study we usually adopt stratified random sampling. The population is first divided into strata and then from each strata sample units are selected at random. In this type of sampling sample units can be selected proportionally or dis-proportionally. For instance, if male and female constitute 60 and 40 percent in the population same proportion should be reflected in the sample as well. When it is done it is called proportional, else the allocation is called disproportional. The sample can also be selected at various stages. For example in the first stage we sample the states, then districts and then villages. This type of sampling is called multi-stage sampling. When area based divisions are created and samples are taken for instance left and right side of the road, north and south side of rive etc we have cluster sampling. In cluster

sampling ideally each cluster should contain same number of units. It may be noted that difference between the stratified and cluster sample lies in the fact that stratification is done on the basis of attributes so that within strata units are homogenous with respect to the stratification attribute, whereas cluster is merely a geographical division and within the divisions there is no homogeneity.

There is another type of sampling methods where a fixed rule is applied rather than any probability scheme. One such method is called systematic sampling. In systematic sampling first unit is selected at random and then every unit is selected at fixed interval determined by the ratio of number of population unit and expected sample size. For instance if we want to select a sample of size 10 from 500 units fixed interval will be 50; the first unit will be selected at random from 1 to 50 and then every 50th unit will be selected until 10 units are selected. One can, however, be imaginative and combine different methods to make the sample more representative of the population. Such samples are called mixed sample.

8.8 SAMPLING AND NON-SAMPLING ERROR

It is evident from above that a sample typically entails only a part of the population and as such, sample result is different from the true population value. The difference is termed as error. Unless and until all units of population is considered this error is going to remain in sample. Since the error is consequent on sample itself this error is called sampling error. Or in other words, the sampling error emerges due to the fact that sample does not consider all units of the population. Reasons behind sampling error can be manifold viz. faulty sampling method, substitution, estimation bias, variability in amongst the population units. These are not within the control of the sampler.

Besides the sampling error, there can be other errors as well. For

instance there can be differences between sample result and true population value due to respondents' bias, intentional and unintentional mistakes by respondents, investigators' bias, lack of training of investigators, wrong interpretation and sequencing of questions, faulty survey schedule, improper coverage, compiling error etc. Such non-probabilistic errors are called non-sampling error. Note that reasons for non-sampling error are very much under the control of human beings.



CHECK YOUR PROGRESS

Q.1: What do you understand by parameters?

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Q.2: Statistically, the variation in the distribution of any sample statistic is known as .....

Q.3: What is a pilot test?

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Q.4: What is stratified random sampling?

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Q.5: Why does a sampling error occur?

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8.9 LET US SUM UP

- In this chapter we have learnt about sample and sampling theory. We have learnt about meaning and methods of sampling. We have discussed about various types of sample and different methodologies of sampling. We have discussed the fundamental relations as to how an appropriate sample size can be determined. We have also discussed various techniques of sampling methodology for drawing representative samples from population. We have highlighted benefits of sampling. We have also understood the difference between sampling and non-sampling errors.



8.10 FURTHER READING

1. Fundamental of Statistics"; S C Gupta, S Chand and Company, New Delhi
2. Fundamental of Statistics"; A M Gun, M K Gupta, B Dasgupta, Vol. I, World Press
3. Basic Statistics"; A L Nagar, Oxford University Press
4. Basic Statistics"; B L Agarwal, New Age International
5. Statistics without Tears", D Rowntree, Penguin Books



8.11 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: The statistical constants of the study attributes in population are known as parameters.

Ans. to Q. No. 2: Standard error

Ans. to Q. No. 3: A pilot test is a pre-test to obtain a possible standard deviation.

Ans. to Q. No. 4: If the population can be divided into segments based on some characteristics and we expect that these characteristics have some systematic relations in the result under the study we usually adopt stratified random sampling. The population is first divided into strata and then from each strata sample units are selected at random.

Ans. to Q. No. 5: Reasons behind sampling error can be manifold viz. faulty sampling method, substitution, estimation bias, variability in amongst the population units.



8.12 MODEL QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q. 1: What is population?

Q.2: What are the different types of population?

Q. 3: What is a sample?

Q.4: What do you mean by sampling? What are the different types of samples?

Q. 5: What are the basic issues of sampling theory? State and briefly elucidate.

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: What is census method? What are its disadvantages? When is census method preferred?

Q. 2: Mention the advantages of sampling over complete enumeration method.

Q. 3: What are parameter and statistic? Briefly explain the idea of sampling distribution of a statistic.

Q. 4: What is sample design? Briefly explain different sampling methods?

Q. 5: What is the basic difference between cluster and stratified sampling method? When a stratified method is preferred?

Q. 6: Distinguish between sampling and non-sampling error.

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