COURSE CODE: MAMCD 301

COURSE NAME: COMMUNICATION RESEARCH METHODS

CENTRE FOR DISTANCE AND ONLINE EDUCATION
TEZPUR UNIVERSITY

MASTER OF ARTS

MASS COMMUNICATION AND JOURNALISM

BLOCK II

Tezpur University
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Objective

- **To offer degree, diploma, certificate level programme of study through distance learning in various emerging subjects across the disciplines.**
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- **To undertake various research and academic activities for furtherance of distance education in the region.**
- **To contribute to conserve and promote cultural heritage, literature, traditional knowledge and environment conducting short programmes, workshops, seminars and research in interdisciplinary field.**

MMC-301: COMMUNICATION RESEARCH METHODS

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BLOCK II

TABLE OF CONTENT

COURSE INTRODUCTION

This course (MMC 302) focuses on teaching the learners about research methodology in context to communication studies. The concept of research is about scientific investigation into a phenomenon for finding answers to the research questions or hypothesis developed by a researcher. This course aims to give you an understanding about the significance of research in social sciences along with discussing different concepts related to research. This course is based on fourteen units which are further categorized into module I, II, III and IV.

The Module I is entitled as "Introduction To Communication Research" which comprises of four units including Unit 1 to Unit 4. The Unit 1, i.e. Research: meanings and concept, explains the definition of research and also characteristics of scientific research. The Unit 2 is based on the Indian perspective of communication research. Unit 3 discusses research in different disciplines under social sciences such as sociology, psychology, anthropology, political science linguistic, etc. Unit 4 explains different terms used in research such as variables, hypothesis, induction, deduction, theoretical framework, etc. The Module II is based on the topics such as types of research, research problem, research process and review of literature which are discussed in Units 5, 6, 7 and 8 respectively.

The Module III is based on discussing different methods of research including pilot studies, survey, content analysis, case study, ethnography, etc. in Unit 9. In Unit 10, it contains explaining the concept of sampling including different terms such as sample, universe, sampling frame, sampling size, probability and non-probability sampling, etc. On the other hand, Unit 11 is based on different data collection methods of primary and secondary data which include observation method, focus group discussion, etc.

The Module IV is comprised of three units, Unit 12 discusses the process of data analysis and different statistical methods, Unit 13 is based on the

aspect of writing research report and the Unit 14 deals with explaining ethical issues related to research.

MODULE III: RESEARCH METHODS

UNIT 9: METHODS OF RESEARCH

UNIT STRUCTURE

9.1 INTRODUCTION

Research methods encompass strategies to implement the research design pertinent to research topic. The methods entail strategies of data collection, data analysis and formulation of scientifically proven causal relationships to justify the research question(s) being addressed through the particular research. This unit gives a comprehensive understanding of several quantitative and qualitative methods of research in social sciences (particularly in communication studies) like survey, case study, content analysis and ethnography. As one particular research method could be better suited for addressing a particular research problem than others (because the data a researcher collects through different methods will vary in quantity and quality) it is important to choose a research method appropriately as inappropriate methods will lead to inadequacy of pertinent

data. The unit elaborates the philosophy, techniques, advantages and disadvantages of each research methods so as to enable you to efficiently choose appropriate research method while conducting research.

9.2 OBJECTIVES

A thorough study of this unit shall enable you to -

- Understand the significance of research method(s) in research process.
- Learn the nuances of different research methods in use in social sciences.
- Comprehend the application of different research methods.
- Choose research method(s) appropriately and efficiently while conducting research.

9.3 PILOT STUDY

Pilot study is considered as the first step in the entire research process which encompasses a preliminary, smaller scale trial study conducted on very limited participants who closely resemble targeted research participants, so as to gain insight on the feasibility of the undertaken research and effectively design the main research protocols. It is executed either as an external pilot study which is independent of the main study or as an internal pilot study which is included in the research design of the main study. It reflects all the corrective actions to be undertaken during the main research and hints on the feasibility of the study by assessing the inclusion and exclusion criteria of the research participants, pre-testing of research instruments, randomization and generalization of the findings, as well as provide training to the researcher to gauge the purpose, method and procedures of the research in much more holistic terms.

One of the key reasons why a pilot study is needed by researchers is to obtain the required preliminary data in situations where there is little

scholarship about the research topic or while executing unprecedented research instruments. As pilot studies are considered as the trial runs done in preparation for the main research, one of the advantages is that it (might) give advance warning to the researcher about where the study could probably fail, where research ethics may not breach, whether proposed methods are inappropriate or unnecessarily complicated, etc. If the pilot study does not lead to modification of procedures then the collected data might be incorporated into the main research.

Let us go through few steps that are to be taken by researchers while conducting pilot study –

a. Ensure support from those who have a stake in the findings or results of the pilot study.

b. Identify experts according to your research topic and seek guidance from experts for overseeing the evaluation process.

c. Define precisely the purpose of the evaluation and how the results can be utilized (in terms of correcting research design or incorporating the results in main study).

d. Determine the target participants and formulate the steps to be undertaken (data collection tools, data analysis methods, etc.) during the pilot study.

e. Specify the research timeline and the required budget.

f. Formulate recommendations and prepare an evaluation report.

CHECK YOUR PROGRESS – A

1) State the importance of pilot study in research.

2) Briefly elaborate the steps to be taken by researchers while conducting pilot study.

9.4 SURVEY

Survey method encompasses collection of quantified and systematic data (through questionnaire) from the pre-defined target population (individuals or organizations or any other units) under study, in order to gain information and insights which will facilitate the researcher to describe or identify co-variation between variables that may scientifically establish causal relationships or point out predictive patterns of influence. Survey method entails several steps like defining the purpose of the study, design appropriate questionnaire, determine adequate sample size, decide the statistical tools for analysing collected data, etc. In order to ensure effective execution of survey method, researchers must conduct one or more pilot studies so as to detect errors in the pre-determined procedures or approach.

Survey is one of the most widely used research methods in social sciences because it facilitates investigation in realistic settings (no need to arrange for laboratory or screening room) and solicits larger amount of varied and specific data (not constrained by geographical boundaries) by investing comparatively lesser amount of fund (than other methods). There are certain disadvantages of survey method which researchers must tactfully deal with so as to scientifically justify the inferences drawn from the data collected through this method. In survey method, researchers cannot manipulate independent variables the way it can be done in laboratory experiments. Without any control over the independent variables, the researchers cannot easily justify whether the relationships between independent and dependent variables are causal or non-causal. Moreover, inappropriate wordings or placement of questions within a questionnaire might lead to bias and low response rate. There is also scope of including ‘wrong’ respondents mistakenly or unknowingly, like in a telephone survey on early adulthood (covering age group 20 to 40) a respondent may hide the real age and falsely claim to belong to that age group while answering the questions posed by the interviewer, on the other side of the telephone

Broadly speaking there are two major types of surveys namely - descriptive and analytical, based on the findings or results solicited. Descriptive survey attempts to document or explain current conditions pertinent to the phenomenon being studied. For an example, television networks surveys on audiences to measure programming tastes in order to align the televised programmes with audiences' gratification. Analytical survey attempts to describe and explain the reasons behind existence of a particular phenomenon through examination of one or more variables. The findings help researchers to investigate interrelationships among variables and develop explanatory hypothesis. For an example, television networks surveys on audiences to determine whether viewers' changing values can be used to predict the success of televised programmes.

Based on application or technique being used to collect data, survey method has five basic types, namely – mail survey, telephone survey, personal interview, group-administered survey and online survey. Researchers must select the most appropriate survey approach from among the five basic types keeping in mind the available time, purpose of the study, available funds, type of data required, etc. Now let us go through each type of surveys -

Mail Survey – It encompasses sending self-administered questionnaires to a selective sample of respondents. Often researchers send stamped reply envelops enclosed with the questionnaire to encourage respondents to send their completed questionnaires back to the researcher. Mail surveys help researchers in collecting larger amount of information (also cover wider geographic areas) without investing much time and money. This technique also provides anonymity as some respondents might be sensitive in answering questions candidly (in front of interviewer). Moreover, the questionnaires can be completed anywhere where the respondent finds it convenient. Although mail survey eliminates the bias of the researcher (or interviewer) because there is no personal contact between the interviewer

and respondent, it is never known who exactly answered the questions in the questionnaire.

Telephone Survey – It requires technologically sound interviewers who can ask questions to the respondents and record the responses, usually on a computer. The respondents cannot see the actual questionnaire but also listen to what the interviewer is asking. It offers more control over the respondents (as the respondents have to talk to the interviewer on phone) and ensures faster higher response rates than mail surveys. The interviewer's presence (through voice) and manner of speaking should not influence the respondents in answering questions in a particular way.

Personal Interview – It is also known as one-on-one interview in which a respondent is invited by the interviewer to a particular place (convenient for both) for the interview. Personal interviews can be structured (close ended) or unstructured (open ended). This technique facilitates a rapport between the interviewer and the respondent(s) which might help the interviewer to elicit replies to sensitive questions that would remain unanswered in mail or telephone interviews. The drawbacks of this technique encompass interviewer bias (physical appearance, sex, age, race, dress, nonverbal behaviour, etc. might influence the respondents in answering questions in a particular way) as well as investment of more time and money.

Group-administered survey – In this technique a group of respondents is gathered together at a pre-determined place and provided with individual copies of the questionnaire or requested to participate in a group interview. It might also include analysis of audio-visual materials. The questionnaire can be longer in length as the respondents have gathered with the sole purpose of participating in the survey. This technique is very expensive and the costs include refreshments, audio-visual equipment, venue charge, incentive for interviewers, etc.

Internet Survey – Collecting data through Internet has escalated since 1990s. Respondents are contacted via telephone, letter or email and requested to participate in the undertaken research. Respondents who agree are either sent an online questionnaire or provided with a link to access the questionnaire.

CHECK YOUR PROGRESS – B

1) State the importance of survey method of research.

2) Briefly elaborate five basic types of survey research being used

9.5 CONTENT ANALYSIS

Walizer and Wienir (1978) define content analysis as any systematic procedure devised by researchers to examine the content of recorded information. Krippendorf (2004) defines content analysis as a research technique for making replicable and valid references from data under study. Kerlinger (2000) defines content analysis as a method of studying and analyzing communication in a systematic, objective and quantitative manner for the purpose of measuring variables. On the context of content analysis in mass media researches, Berger (1991) defines content analysis as 'a technique that is based on measuring the amount of something (violence, negative portrayals of woman or whatever) in a representative sampling of some mass mediated popular form of art' (p.25). Kimberley Neuendorf (2002) defines content analysis 'as a summarizing, quantitative analysis of messages that relies on the scientific method and is not limited as to the types of variables that may be measured or the context in which the messages are created or presented'.

The first example of content analysis was probably an examination of almost 90 hymns published in Sweden in the year 1743 (Dovring, 1954).

The history of modern content analysis can be traced back to World War II, when the Allied intelligence units monitored the number and types of popular songs played on the European radio stations. By comparing the music played on the German stations with that on other stations in occupied Europe, the Allies were able to measure (with some degree of certainty) the changes in troop concentration on the continent. In the Pacific theatre, communications between Japan and various islands bases were tabulated; an increase in message volume to and from a particular base usually indicated some new operations involving that base. After the World War II, researchers used content analysis to study propaganda in messages disseminated through newspapers and radio broadcasts. In 1952, Bernard Berelson published the book *Content Analysis in Communication,* which signaled that the technique had gained recognition for mass media researchers. Kamhawi and Weaver (2003) revealed that content analysis was the most popular data gathering method reported in major mass communication journals between 1995 and 1999.

Berelson (1952) suggested five main purposes of content analysis. Those are –

a. To describe substance characteristics of message content.

b. To describe form characteristics of message content.

c. To make inferences to producer of content.

d. To make inferences to audiences of content.

e. To predict the effects of content on audience.

Content analysis is generally conducted in several pre-determined, well framed and discrete stages. Although the steps listed below are sequenced, they need not be followed in the order given. Nonetheless, the following steps may be used as a rough outline to conduct content analysis:

a. Formulate the research question(s) or hypothesis.

b. Define the universe in question.

c. Select an appropriate sample from the population.

d. Select and define a unit of analysis.

e. Construct the categories of content to be analyzed.

f. Train coders and conduct a pilot study.

g. Code the content according to established definitions.

h. Analyze the collected data.

i. Draw conclusions, search for indications and prepare recommendations.

CHECK YOUR PROGRESS – C

1) Define content analysis as an important research method.

2) Briefly elaborate the steps to be taken by researchers to conduct content analysis.

9.6 CASE STUDY

Case Study method is a qualitative approach of research which uses as many data sources as required to systematically investigate individuals or groups or organizations or events, etc. so as to draw justifiable inferences to answer research question(s) in a particular study. Case study is generally conducted when a researcher needs to comprehend and explain a phenomenon in much more holistic terms. This method is particularly advantageous to the researcher who is trying to find clues and ideas for further investigation or research (Simon, 1985). In the words of Yin (2003) case study as an empirical inquiry which uses multiple sources to solicit wide spectrum of evidence in order to investigate a contemporary phenomenon within its real-life context, in which the boundaries between

the phenomenon and its context are not clearly evident. Documents, historical artifacts, systematic interviews, direct observations, and even surveys can be incorporated while soliciting data for case studies. Depending upon the research objectives and research question(s) case study research can include both single case as well as multiple cases. Case study method is extensively conducted in disciplines like anthropology, clinical psychology, history, management studies, communication studies, etc.

Merriam (1988) lists four essential characteristics of case study method of research. Let us understand these points –

a. **Particularistic**: Case study focuses on a particular phenomenon (be it event or organization or individual) making it an appropriate method for studying the problem in-depth and holistically.

b. **Descriptive**: Findings of case studies provide detailed description through explanatory data pertinent to the research problem being addressed in the undertaken research.

c. **Heuristic**: Case study helps researchers to comprehend what's being studied through newer interpretations, newer perspectives, newer meaning and fresh insights.

d. **Inductive**: Most case studies depend on inductive approach of research and attempt to discover new causal relationships rather than verifying existing hypothesis or deducing from existing scholarship.

Despite several advantages benefiting a researcher there are few disadvantages of case study method of research. Several scholars have mentioned that there is a lack of scientific rigor in most of the case studies. Yin (2003) points out that "too many times, the case study researcher has been sloppy and has allowed equivocal evidence or biased views to influence the … findings and conclusions" (p.10). The second criticism is that the findings of the case studies are not always appropriate for generalization of the inference to the whole population. Moreover, this

method is time consuming and may produce large quantities of data that are difficult for researchers to codify and summarize.

Let us go through few steps that are to be taken by researchers while conducting a case study –

a. Appropriately develop the protocols and design of the case study depending upon the research question(s) to be addressed during the study. A proper design will elaborate the reasons for choosing a particular case (be it individual or organization or event), number of cases to be studies and also methods of analysis.

b. Conduct a pilot study so as to refine the research design and take corrective actions to rectify faulty research procedures (if any).

c. Collect data through several sources and methods like documents, interviews, observation, etc.

d. Analyze the collected data appropriately. Yin (2003) elaborated three broad analytic strategies for case studies namely – pattern matching, explanation building and time series. In pattern matching strategy, an empirically based pattern (of occurrence of a particular phenomenon) is compared with one or more predicted patterns. Explanation building stage encompasses constructing an explanation about the case by framing statements about the cause(s) of the phenomenon under study. In time series, the researcher tries to compare a series of data to theoretical trends that have already been predicted or established through other case studies conducted by other researchers

e. Enumerate the report in a proper format stating the problem, methods, findings, discussions, recommendations, etc.

CHECK YOUR PROGRESS – D

1) State the importance of case study method in research.

2) Briefly elaborate the steps to be taken by researchers while conducting a case study.

9.7 ETHNOGRAPHY

Ethnography is a qualitative research method in which a researcher (or ethnographer) studies a particular social or cultural group for a considerable period of time in their natural settings by actively participating or getting 'immersed' in the group in order to gain insider's perspective of the group and to have experiences similar to group members. The method emphasizes studying a cultural or societal phenomenon from the participants' frame of reference. Scholars in qualitative researches like Daymon and Holloway (2002) suggest that successful ethnographic research blends together the 'outsider' perspective of the researcher with the 'insider' perspective of those individuals or groups being observed. In the scholarship pertaining to ethnography, this approach is often discussed as a blending of etic and emic point of views. While etic approach assigns meaning to cultural traits and patterns on the basis of general scientific concepts, principles and theories, emic approach assigns meaning on the basis of informants' perspective prevailing within the internal meaning system of the natives' culture.

Sarantakos (1998) elaborated that ethnography can be grouped into two categories namely - descriptive and critical, based on the approach or focus of the undertaken research. Descriptive ethnography encompasses detailed explorative or interpretive account of the cultural or social group being studied. Critical ethnography uses critical paradigm with a goal which is often political in nature and might involve giving voice to disempowered groups in society. Data is collected by using several research techniques like observation, intensive interviewing, photography, video recording, etc.

Ethnography was first practiced by anthropologists, sociologists but recently disciplines like cultural studies, political science, education, social work and communication studies have incorporated ethnography as an important research method.

LeCompte and Schensul (1999) provide step-by-step procedures for conducting an ethnographic research. The initial stage begins with defining the problem or phenomenon to be explored by the ethnographer. Questions that are most appropriate to ethnography involve examining and understanding how the particular group of people under study perceives a certain phenomenon. It is important for the ethnographer to have a holistic in-depth understanding of the group's world view and ethos. The next step is to select the appropriate field of study, i.e. the place from where data will be empirically collected by the ethnographer. In some instances, research question(s) are developed at first and then appropriate field(s) is/are selected. In other cases, the ethnographer finds a suitable and interesting field and eventually frames research question(s) pertinent to the chosen site. Ethnographers mostly use purposive and snowball sampling in order to gain access of the expertise through key informants. Keeping in mind the research objectives and question(s) and the information provided by key informants, ethnographers determine when and where to observe the phenomenon under study, what individuals to single out for intensive interviews, what are the relevant documents, etc. It is followed by extensive fieldworks. Field visits are then followed by data analysis and preparation of reports.

It is interesting to note that Emerson, Fretz and Shaw (1995) suggest constructing four types of field notes during field visits like -

a. **Condensed accounts** – vivid descriptions either written or recorded in the field highlighting the most important observations or key points so as to reflect or emphasize in later accounts.

b. **Expanded accounts** – complete and thorough written details filled after the period of observation or interview (containing descriptions not included in the condensed accounts).

c. **Fieldwork journal** – contains ethnographer's personal reactions, impressions and reflections about the fieldwork or the interview.

d. **Analysis and interpretation notes** – attempts by the ethnographer to integrate observational and interview data into coherent analysis scheme so as to facilitate further interpretations.

CHECK YOUR PROGRESS – E

1) State the importance of ethnography as a research method.

2) Briefly elaborate the steps to be taken by ethnographers while

9.8 SUMMING UP

In this Unit you have come to know about different methods of research used by researchers in social sciences. You have learnt about the importance of selecting appropriate method(s) of research which is guided by research problem and question(s) being addressed through the undertaken research. As you have come to know about the application and nuances of different methods of research, it will help you in appropriately and effectively designing research method(s) for your research paper, dissertation and/or thesis.

9.9 QUESTIONS

1. Briefly elaborate about the research methods frequently used in social sciences.

2. State the importance of pilot study before conducting survey research.

3. Explain how ethnography differs from survey as research method.

9.10 RECOMMENDED REFERENCES

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UNIT 10: SAMPLING

UNIT STRUCTURE

10.1 INTRODUCTION

Depending upon the research objectives and questions to be addressed within a stipulated time through the undertaken research, social scientists (in order to collect pertinent and accurate data) often select a small representative portion from the larger target group of potential research participants (that has all the important characteristics of the target group) through a technique or method of identification and selection known as sampling. After examining these selected portions (known as sample), researchers generalize the research findings to the larger target group (known as population). The extent to which the research findings can be either statistically or analytically generalized to the larger target group (population) is an indication of external validity of the research design. In order to efficiently design sample selection, it is imperative to understand

the meaning of sampling, various concepts associated with sampling process, the different sampling methods and how to apply appropriate sampling techniques for collecting relevant data for different studies.

10.2 OBJECTIVES

A thorough study of this unit shall enable you to -

- Define sampling and comprehend its importance in research
- Understand the different concepts associated with sampling
- Know the various sampling methods and their effective application

10.3 SAMPLING CONCEPTS

Sampling can be defined as the process or technique of identifying and selecting definite data sources or research participants who are either statistically representative of the larger target population under study or analytically rich and relevant as information sources for the undertaken research. Sampling ensures the convenience of collecting intensive and exhaustive data about the characteristics of the population by utilizing limited resources (like time and economy) as it is almost impossible or impractical to study the population in its entirety. Despite making the research process much easier, sampling process or sample design is often questioned of its operational credibility when there are perceived chances of bias, inadequacy of representative sample, problems of accurate generalizations, etc. Broadly speaking there are two types of sampling techniques namely - Probability Sampling and Non-Probability Sampling. Depending upon the sampling technique applied for sample selection probability sampling can be further categorized into Simple Random Sampling, Systematic Sampling, Stratified Sampling and Multistage Cluster Sampling. Likewise Non-Probability Sampling can also be categorized into purposive Sampling, Convenient Sampling, Quota Sampling and Snowball Sampling depending upon the strategy a researcher

undertakes in order to choose appropriate sample during the research process.

In order to comprehend different methods of sampling one must first understand the associated concepts such as: sample, population, sampling unit, sampling frame, sample size, statistics and parameters, sampling bias and non-sampling error.

a. Population

Population can be defined as the well-defined universe of units comprising of all the elements under study (as specified by the objectives of the undertaken research) from which the sample is to be accurately selected and researched upon in order to draw statistically or analytically generalized inferences. It can refer to groups of people or events or objects or organizations or any aggregate observation of subjects that are grouped together in the undertaken research because of commonality in characteristic(s). Depending upon different research topics in mass communication, example of population can be - televised soap operas in a particular regional language, all readers of a particular magazine, viewers of a particular televised programme, collection of big-city newspaper articles on health communication, university students using social networking websites, etc.

b. Sample

Sample can be defined as the selected, finite and representative part of the population that can accurately reflect the properties of the macrocosm (population) under study. It is a subset of the population (be it groups of people or events or organizations, etc.) selected for investigation based on either probability or non-probability approaches. When the population is homogenous the small sample size would reflect the characteristics of the entire population. However, if the population is heterogeneous, the sample size needs to be bigger and must also reflect proportional heterogeneity. For an example – let us assume there are 500 doctoral students in Tezpur

University and a researcher wants to study their media literacy. S(he) can select 50 doctoral students (10% of the total number of doctoral students) as sample who will be regarded as the representative of the entire population of doctoral students of Tezpur University.

c. Sampling unit or element

Sampling unit or element is the basic unit pertinent to research topic about which information is to be collected during research process. Each student or household or media content or channel or community can become the basis of the sample for study on a particular research topic.

d. Sampling frame

Sampling frame is a list or database consisting of identifiable, quantitative, concrete, adequate, up-to-date and accurate sampling units (present in the defined population) from which the sample can be identified and selected by the researcher for the undertaken research. List of all households and/or persons enumerated in population census can be an example of sampling frame. Any discrepancy in the sampling frame will subsequently lead to sampling error and unreliability of the collected data. Sampling frame can be of various types like - List frame, Area frame and Multi-stage frame and frames for series of surveys. List frame consists of a list of observational large units that have substantial share in the population and are usually used during single stage sampling or complete enumeration. Area frame consists of information on geographical units of any country like boundaries, population figures, etc. Multi-stage frame is used for multi-stage sample selection at later stages of sampling process.

e. Sample size

Determining the exact size of the sample is one of the problems faced by researchers in the sampling process. There are no fixed rules on sample size, and depending upon the research objectives and questions to be addressed through the study, researchers must justifiably and appropriately

determine the suitable sample size. Sometimes large sample size is advisable to statistically represent a large heterogeneous population whereas in some cases even a very small sample size rich in required information is sufficient. Some of the guiding factors on sample size depend on the following principles of sampling –

- Larger the sample size, the more accurate will be the estimate of the population parameters.
- In most cases where sampling is done there will be difference between the sample statistics and the population parameters, which is attributable to the selection of sample units.
- Greater the difference in the variable under study in a population, for a given sample size, the greater will be the difference between the sample statistics and the population parameters.

As per the necessity of sampling the main concern is to understand the characteristics of the target population. In order to infer the characteristics of the entire population, it is important to maintain the accuracy at every stage through reduction of bias and increase in the confidence level of inference. To offset any sampling error it is advisable to increase the sampling size as the findings based on larger sample size have more certainty than those based on smaller ones. The greater the variation in the sample, the greater will be the variation in the aspects of the target population therefore, it is essential to have sufficiently large size of sample to include all the heterogeneous groups during selection.

f. Statistics and Parameters

Statistics is the numerical character of the sample, while the parameter is numerical feature of the entire population. For an example, statistics is average income of the selected sample whereas if we calculate the average income of the entire population that would be the parameter. But, generally, it is not plausible to study the entire population and come out with exact values of parameter. Therefore, researchers infer the parameters

by studying the values from the selected sample. The accuracy of measurement depends on how appropriately the sample represents the population.

g. Sampling bias

Sampling bias is a distortion in the representativeness of the sample that arises when some members of the population (or more precisely the sampling frame) stand little or no chance of being selected for inclusion in the sample.

h. Sampling error

Sampling error is the extent to which population parameters deviate from sample statistics resulting in an error in the findings of the study. In spite of the attempt to carefully select a representative sample and listing out the sampling frame, the sample values are only an approximation of the population parameters and are often not accurate. This error may occur even though a probability sampling method has been used during the sample selection. The probability theory helps researcher to estimate how much the sample statistics may vary from the population parameters by using confidence level and confidence interval. Confidence level specifies how much of the statistics are reliable in estimation of the population parameters. Confidence interval mentions how far one can expect the sample statistics to vary from population values.

i. Non-sampling error

Non-sampling error can be defined as the errors in the findings derived from research due to the differences between the population and the sample that arise either from deficiencies in the sampling approach, such as an inadequate sampling frame or non-response or from other problems like ambiguous words in questions, poor interviewing or flawed processing of data.

CHECK YOUR PROGRESS – A

1) State the difference between population and sample.

2) Elaborate sampling and non-sampling errors with examples.

10.4 PROBABILITY SAMPLING

Probability Sampling is based on the theory of probability in which samples are selected randomly (depending upon research objectives and questions) with no discretion of the researcher. It is considered more scientific as compared to non-probability sampling techniques since the choice of specific sampling unit does not depend solely upon the judgment or expertise of the researcher. This technique of sample selection provides every unit of the population an equal and independent chance of being included in the sample. It assumes that each random sample from a specific population provides an assessment of the entire population parameters and the multiple samples drawn from the target population will yield similar statistics to that of the parent population.

Probability Sampling can be further categorized into Simple Random Sampling, Systematic Sampling, Stratified Sampling and Multistage Cluster sampling. Now, let us understand each Probability Sampling techniques in details.

a. Simple Random Sampling

Simple Random Sampling is one of the basic methods of drawing representative sample provided the population is knowable, small and homogenous. The researcher must define the population under study, make a list of all the units in the population and number them. S(he) must then decide the size of the sample or the number of the units to be included in the study. Then with the help of lottery method or random number tables

(Tippet's table) s(he) must pick the units to be included as the chosen sample. Although simple random sampling is easy to use in homogenous population, it is impractical if there is non-availability of population details and/or the population under study is heterogeneous in nature. Moreover, this technique is time consuming and impractical at times of non-availability of population details. For an example – In a class of 100 students, if a researcher wants to study the social media habits, s(he) must first write each name in different pieces of paper, select the sample size (let us say 25 in this case) and draw 25 times from the jar containing the students' names.

b. Systematic Sampling

Systematic Sampling entails enlisting the population units based on certain order (like alphabetically or street number or seniority, etc.), determining the desired sampling fraction (like 50 out 1000 in which 50 is represented by 'n' and 1000 by 'N') and finding the Kth unit (through K = N/n formula) by taking 'n' item in population after a random start with an item from 1 to n. This technique is applied to generate more even spread of the sample over the population list and leads to greater precession. Thus, if the researcher intends to select 10 sample units from the population of 100, the systematic sampling may be every 10^{th} unit (applying K= N/n formula). If the random start begins say at number say 6, the selection would be 6, 16, 26, 36, 46, and so on until it reaches the last selection number 96. Systematic sampling is applied to draw samples in various target populations like houses in street, students in a university, telephone directory, etc.

In this technique, two associated concepts are sampling ratio and sampling interval. Sampling ratio is the ratio between population and desired sample size. In case our sample size is 100 and population is 1000 the sampling ratio is 1:10, or if the sample size is 100 in the population of 4000, then the sampling ratio is 1:40. The sampling interval means the constant interval between every unit selected as sample. In the first example when the

population is 1000 and sample size is to be 100, the sample interval would be 10 and in the second population of 4000 and sample size is 100, the sample interval would be 40.

c. Stratified Sampling

When the population under study is heterogeneous in nature, the researcher must stratify the population into distinguishable as well as mutually exclusive and exhaustive strata, each of which is homogeneous with respect to one or more characteristic(s). Stratified sampling is not an exclusive method from simple random and systematic sampling instead it combines and modifies the techniques of both to make it more suitable for heterogeneous population. The stratified sampling method starts by organizing homogenous subsets within the larger population and selects proportional sample from each of the subsets, applying either simple random sampling or systematic sampling techniques. Human samples unlike inanimate objects are complex characters and differ in number of ways even in what is known to be the most homogenous of human groups. It is because of this reason whenever measuring human behavior is undertaken applying stratification sampling method is advocated.

To generate stratified sample, the researcher first of all must specify clearly distinguishable subgroups with specified demarcations. In case the researcher wants to study a village, the subgroups may be based on male, female or education, income and social status. After specifying different variables, the researcher must prepare the sampling frame for each subgroup. Then the next step involves applying either simple random method or systematic sampling with random start method to select the representative sample proportionate to their respective subgroups population.

Stratified sampling in a village can be -

Gender	Education	Income	Age
Male	Subgroup 1	Subgroup 3	Subgroup 5
Female	Subgroup 2	Subgroup 4	Subgroup 6

As seen in the above table, if a village is the population for study, the subgroups in the village is based on gender, education, income and age, etc. The researcher then will take representative sample from each of the subgroups according to their proportionate size in the overall population.

Stratified Sampling can be further divided into Proportionate Stratified Sampling and Disproportionate Stratified Sampling. Proportionate Stratified Sampling involves drawing a sample from each stratum in proportion to the latter's share in total population. Disproportionate Stratified Sampling involves giving over representation to some strata and under representation to others. The desirability of disproportionate sampling is usually determined by factors like – sizes of strata, internal variances among strata and sampling costs.

d. Multistage Cluster Sampling

For an example in a study on the entire population of Assam, it would be very difficult to prepare a sampling frame for such a huge population. In this stage, multistage cluster sampling is applied. It begins by dividing the population of elementary units into groups or clusters by applying simple random sampling or systematic sampling of subgroups or technically called clusters within the larger population. In this case, it may be districts or blocks in Assam, followed by second stage of clusters of villages or towns within the blocks as subgroups and finally sampling frame is prepared from the smaller subgroups and final sample is selected for any study. Based on samples selected at different stages, the samples selected at the first stage is called primary sampling units, at the second stage the samples selected are

called, secondary sampling units with final sampling units selected at the end.

CHECK YOUR PROGRESS – B

1) Describe the four types of probability sampling methods with suitable examples.

10.5 NON-PROBABILITY SAMPLING

Non-Probability sampling methods deploy non-random methods of sample selection in which not all units of the population get equal and independent chance of being included in the sample. In non-probability sampling statistical generalization of the findings of the population becomes problematic. This approach does not need to prepare sampling frame of the parent population to generate representative sample. Therefore, the usage of non-probability sampling is recommended only in certain types of research where the need to statistically generalize is less or the possibility of preparing sampling frame is dismal, the research objectives do not require randomness and instead intentionally picks up a particular group or sample for the study like in qualitative research, exploratory research, pilot study, etc. Non-Probability Sampling can be further categorized into Purposive Sampling, Convenience Sampling, Quota Sampling and Snowball Sampling based on the techniques a researcher uses for sample selection. Now let us understand each Non-Probability sampling techniques in details.

a. Purposive or Judgment Sampling

Purposive sampling entails the deliberate selection of sample units by the researcher that conform to some predetermined criteria or research purpose. The researcher strategically chooses informants who in his or her opinion are likely to have the required information and also willing to share it. In such cases the researcher does not wish to generalize the findings beyond

the target group. Purposive sampling is a widely used technique of sample selection in qualitative research which encompasses identification and selection of information-rich cases for the most effective use of limited resources (Patton, 2002). The informants are especially knowledgeable about or experienced with the phenomenon under study (Cresswell & Plano Clark, 2011). In addition to knowledge and experience Bernard (2002) and Spradley (1979) note the importance of availability and willingness to participate and the ability to communicate experiences and opinions in an articulate, expressive and reflective manner.

b. Convenience Sampling

Convenience sampling is also carried out without enumerating the population into sampling frame instead the researcher selects non-randomly those readily available as the time and location chosen by the researcher. It has no inclusion criteria identified prior to the selection of potential participants. It cannot be considered representative and do not reflect the characteristics of the entire population. This sampling method is used only when the researcher wants to find pertinent information on some phenomenon within the selected sample and not the population or the universe. For an example - sample can be selected by convenience sampling method if any research is being carried out on marketing campaigns like Pepsi Challenge or the viral dance challenge like Kiki Challenge. For such study the researcher can visit any crowded shopping mall or any busy road from where s(he) can get potential research participants and at the same time every individual present there can participate in the study.

c. Quota Sampling

Quota sampling is similar to Stratified sampling but would not have the sampling frame and the exhaustive list of all target units available in the population. However, unlike purposive and convenience sampling it does not leave out the option of representative sample and attempts to generate representative sample with certain limitation in comparison to Probability

sampling methods. In the quota sampling the researcher develops quota table of different subgroups within the larger target population based on research objectives and questions. The researcher will stratify the population into gender, educational level, income, age, ethnic origin, geographical region or other such variables based on the specific characteristic the researcher wants to address through the present study. The subgroups must also reflect the proportionate size within the population and based on the proportionate size of the subgroup the researcher selects sample size according to the subgroup table. The sample units from the subgroups are not listed in the sampling frame and randomly selected, but are selected based on the convenience of accessibility of the sample units and complete sample size as per the sampling quota assigned to each subgroups.

d. Snowball Sampling

Snowball sampling is the process of sample selection using a network or chain of research participants in which fewer identified potential participants recruit other participants for the undertaken research. It begins with few individuals like groups or organizations from whom the information is gathered by the researcher initially. These people are then requested to refer to other relevant informants from whom more insightful data can be collected. The second group is then requested to refer to more people and thus goes the chain of samples until the researcher collect adequate data for the study and/or reach the predetermined sample size (if any). This sampling technique is called snowball because once the researcher have the ball rolling, it picks up more 'snow' along the way it moves and becomes larger eventually. This technique is especially useful when the researcher has little contact with the group s(he) wants to study or the potential participants are wary of coming forward to disclose information fearing possible ramifications (mainly if the research topic is sensitive or socially 'unaccepted' like homosexuality, drug abuse, shoplifting, etc.). The researcher only needs to make contact with very few initially who then direct him or her to more potential research participants.

There is a possibility of bias in this method if the individuals or groups refer to only with certain kind of predisposition or viewpoints.

CHECK YOUR PROGRESS – C

1) Describe the four types of non-probability sampling methods with suitable examples.

10.6 SAMPLING IN QUANTITATIVE RESEARCH

Quantitative researches essentially aim at generalizing the research findings to the larger target population therefore researchers must select sample which are representative of the entire population. Probability sampling techniques are mostly used to identify and select representative sample in quantitative researches as this sampling method provide equal chance to every unit of the population to get selected facilitating optimum number of sample that enable valid extrapolation of inferences about the entire population. Moreover, probability sampling method is considered more scientific than non-probability sampling as there is no discretion of the researcher; this technique of sample selection is repeatable and verifiable which means the results concluded from the quantifiable data can be statistically proved. The principle of randomization in probability sampling also reduces the bias in quantitative research.

CHECK YOUR PROGRESS – D

1) Elaborate why probability sampling is more appropriate in quantitative researches.

10. 7 SAMPLING IN QUALITATIVE RESEARCH

The objectives of qualitative research differ from quantitative research; the holistic and subjective understanding of any phenomenon from research participants' perspective is given more importance in qualitative methods than predictability or generalization of characteristics of the larger target population. The kind of data collected through qualitative methods entails human behavior, attitude, opinion and meanings research participants attach to objects and environs surrounding them. The emphasis is on qualitative data like gender sensitivity of a televised programs rather than quantification of viewership. The qualitative data facilitates in-depth understanding of social, political, cultural and economic context or milieu of a phenomenon. The qualitative approach tries to document the trajectory of evolution along with comprehensive understanding of the phenomenon rather than simple quantification of outcomes, for an example – a qualitative study on how social media has changed communicative purposes and patterns aims to delineate more details on human psyche and behavior than just quantifying the number of social networking sites people are using now-a-days.

Probability sampling is likely to produce a representative sample only if the research characteristics are evenly distributed within the target population. There is no evidence that the values, beliefs, attitudes, etc. (that form the core of qualitative investigation) are evenly distributed amongst the target population, making the probability sampling inappropriate in qualitative research. Moreover, some informants are richer than others in providing insights and understanding for the undertaken research. The research design being deployed for qualitative study must provide scope for flexibility and discretion of the researcher; therefore, non-probability sampling methods are mostly used in qualitative researches.

The qualitative approach adapts the following principles while selecting its field of inquiry:

a. Human beings are complex social agents and are not predictable.

b. Randomized events are irrelevant in social life therefore the issues for study are intentionally chosen to look at the dynamics of complex socio-cultural dimensions.

c. Probability sampling techniques are time consuming and expensive, and above all the findings may have limited or no value for addressing diversified socio-cultural groups.

d. Non-probability sampling is more appropriate as the researcher can intentionally select information rich samples in the field rather than following sampling frame methods.

CHECK YOUR PROGRESS – E

1) Elaborate why non-probability sampling is more appropriate in qualitative researches.

10.8 SUMMING UP

In this Unit you have come to know about sampling which is one of the most important stages in research design. You have learnt about the importance of sampling in research process. Along with knowing the different sampling methods, you have also understood the probable sampling techniques to be applied depending upon research approaches. As you have come to know about the application of sampling techniques it will help you in appropriately and effectively designing sample selection for your research paper, dissertation and/or thesis.

10.9 QUESTIONS

1. Define Sampling stating its importance in the research process.

2. Elaborate the different types of probability sampling methods with suitable examples.

3. Elaborate the different types of non-probability sampling methods with suitable examples.

4. Elucidate with suitable examples how sampling methods differ depending upon research approach.

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UNIT 11: DATA COLLECTION METHODS

UNIT STRUCTURE

11.1 INTRODUCTION

Social scientists deploy suitable methods for collecting pertinent data for the undertaken research after the research problem, research question(s) and research design (quantitative, qualitative or mixed approach) are well framed. Data collection is an important stage in research process as irrelevant data collected by inappropriate data collection methods can impact the validity and reliability of the undertaken study. Moreover, the methods of data collection applied by researchers are also guided by the discipline in which the research topic is anchored. This unit gives a comprehensive knowledge on various data collection methods a researcher must deploy in order to gather pertinent data on the topic s(he) is researching upon. In this unit we shall learn about the importance of

primary data, secondary data, observation, focus group discussion, questionnaire and interview as tools of data collection in the research process. The unit highlights the application and appropriateness of each data collection tool in varied studies.

11.2 OBJECTIVES

A thorough study of this unit shall enable you to -

- Elaborate the importance of data collection stage in research process.
- Understand the different types of data collection methods in social sciences.
- Apply appropriate data collection methods pertinent to undertaken research.

11.3 PRIMARY AND SECONDARY DATA

Data can be defined as a set of values (facts and figures) of qualitative and/or quantitative variables collected by a researcher on the specific topic s(he) is researching upon, so as to draw justifiable scientific inferences. In the parlance of research, there are different sources of collecting information, all of which can be categorized into primary sources (in which the researcher obtain the raw data by his or her direct effort) and secondary data (in which the researcher retrieve existing data that has already been collected and archived by other sources).

Primary data refer to the first-hand data collected by the researcher (by means of direct efforts and experiences) pertinent to his or her research topic through various data collection tools like surveys, interviews, questionnaires, observations, experiments, etc. Secondary data refers to the data collected and analyzed by researchers or researching bodies not related

to the presently undertaken research but have collected these data for some other purposes at some different point of time in the past. If a researcher uses these existing data (that have already been subjected to processing and manipulation) available in the public domain for addressing his or her present research problem, then these become secondary data for the current study. Data collected from sources like government publications, books, journals, peer-reviewed articles, official records, websites, historical documents, etc. comprise the sources of secondary data.

While primary data is considered as current, factual and original which researchers collect to address the research problem at hand, secondary data is the analysis or interpretation of the primary data once collected by individual researcher or investigator agencies or organizations to address some other objectives. A researcher has direct control and supervision on the quality of the primary data s(he) is specifically collecting for his or her research, whereas the usefulness of secondary data in terms of relevance, adequacy and accuracy may sometimes be very limited as those data were collected at some other point of time keeping in mind some other research objectives. Moreover, the researcher has no control over the quality of the secondary data. Primary data collection requires a large amount of resources like time, cost and manpower whereas secondary data can be retrieved quickly and inexpensively. The secondary data also enables a researcher to cite the works of reputed scholars and/or credible researching agencies that gives a frame of reference to the researcher's present study and justify a particular point of view.

CHECK YOUR PROGRESS –A

1) Define primary and secondary data with suitable examples.

2) Elaborate the differences between primary and secondary data.

11.4 OBSERVATION

In the context of research, observation can be defined as a qualitative technique of primary data collection which entails systematic, prolonged observation of a specific phenomenon or behaviour (pre-determined by the researcher) in its natural setting, in order to address specific research question(s) during research process. Observation, as a data collection technique is concerned more with descriptive analysis and holistic understanding of the phenomenon or behaviour under study than with quantification through statistical measurements.

The researcher's role is highly critical to the effectiveness of observation technique. After the identification of research area and framing of research question(s), s(he) must select appropriate research site(s) where the phenomenon or behaviour occurs with sufficient frequency and/or prolonged period of time. Anderson (1987) suggests researchers to select two or three research sites that are stable enough to permit observations, and 'hang around' each one of them in order to gain insight into the advantages and disadvantages of the selected research sites. Once the research site is selected by the researcher, s(he) must try to establish meaningful contact with the subjects or potential research participants to be observed during the study. Gaining access to the research participants in order to collect relevant data through observation is not easy. It requires persistent effort, public relations skills and often necessary permissions from concerned people. Neuman (1997) illustrates entry into a specific community or organization and gaining access to information through an analogy of access ladder. The bottom rung represents the easiest situation in which the researcher is looking for public information. The highest rung of the ladder, which requires the most time spent at the field site, involves

gaining access to sensitive events and information which are otherwise withheld from public.

The researcher is ought to be guided by ethical obligations in order to prevent psychological or emotional distress of those being observed during research process. After building necessary rapport with the subjects the researcher must decide the sample size of the subject (to be observed) guided by the research problem. Mostly observation use non-probability sampling techniques like purposive sampling, convenient sampling and snowball sampling but the chosen sample must be representative of the population as well as rich in providing information for the study. As the researcher cannot be everywhere, every time in order to observe everything occurring so what is observed becomes a de facto sample of what is not being observed (according to the Heisenberg Indeterminacy Principle) during the course of the study.

During field observation the researcher must take adequate note in a proper research diary and might also use audio-video recording devices to record necessary data. Brief notes taken in field must be elaborated without delay so as to take note of every descriptive narration, personal feelings, reflections and interpretations. After completion of field observation, the researcher must file the collected data in order to arrange the raw data in a sequential format so as to ensure systematic retrieval whenever required.

Observation can be categorized into two types, namely – Participant Observation and Non-Participant Observation. Participant observation can be defined as "the process of learning through exposure to or involvement in the day-to-day or routine activities of the research participants in the natural setting" (Schensul, Schensul & LeCompte, 1999). The researcher not only observes the research participants but also actively engages in their activities in order to gain holistic understanding of the phenomenon being studied. It "combines participation in the lives of the people being studied with maintenance of a professional distance that allows adequate

and unbiased observation and recording of data" (Fetterman, 1998). Non-participant observation can be defined as a relatively unobtrusive method of data collection in which the researcher has limited scope for interaction with the research participants being observed during the study. Like researchers who want to study the communicative behaviour of certain people must silently observe the details of how the research participants talk (like voice modulation, intonation, choice of words, etc.) as well as their body language expressed through facial expression, posture, gesture, eye contact, etc. without making the participants much aware of the fact that they are being observed.

CHECK YOUR PROGRESS – B

1) State the importance of observation as a data collection method in research.

11.5 FOCUS GROUP DISCUSSION

Focus Group Discussion can be defined as a qualitative data collection tool in research process which entails interviewing pertinent respondents simultaneously under the supervision of a competent moderator in a relatively flexible, unstructured but focused discussion so as to elicit relevant data pertaining to the undertaken research. It is highly recommended in order to collect information on pilot testing ideas, generating newer thoughts or ideas about a particular phenomenon or behaviour. It provides scope for collection of wide range of opinions relevant to the present study which will eventually ensure holistic understanding of the topic being researched upon. A researcher must conduct as many focus group discussions as s(he) needs to achieve saturation – a point when no longer fresh information are being provided by participants. However, Focus Group Discussion is considered inappropriate to gather quantitative data and must be supplemented with

other data collection tools to address more specific questions to a more representative sample.

Although a researcher must sequentially frame broad as well as specific questions before-primarily based on research problem, the moderator can depart from the pre-determined structure if the respondents present pertinent information, and must follow up on important points raised by participants in the group. It is noticed that one respondent's remarks often tend to stimulate others to pursue lines of thinking. But it also happens often that a group leader monopolizes the conversation imposing his or her opinions on the other participants.

Morgan (1997) suggests that focus groups can be any of the following types –

a) self-contained

b) supplementary

c) multi-method

A self-contained focus group is one in which the group discussion is the only means of data collection and the data obtained from these groups answers research question(s) adequately. A supplementary focus group is one in which the group discussions form the source of follow-up data for the undertaken quantitative study. For example, a researcher who has conducted a survey on online news reading habit might as well conduct a few focus group discussions to gather more insightful information about the reasons people choose to read online news. In the multi-method approach, focus group discussions are only one of the qualitative techniques used to collect data for the undertaken research. The findings of focus group discussions must be combined with other methods of data collection like - observation, case studies, interviews, etc. In this approach, the focus group discussion is not used to supplement other techniques of data collection, but stands as an equally important methodology.

CHECK YOUR PROGRESS – C

1) State the significance of focus group discussion as a data collection method in the process of research.

11.6 QUESTIONNAIRE

Questionnaire is a research tool for data collection which contains series of logically sequenced objective and appropriate questions prepared by researcher, pertinent to his or her research topic, keeping in mind the research question(s) and the research problem (to be addressed through the undertaken research) in order to solicit relevant data from respondents (comprising of pre-determined sample) for analyses. Questionnaire is one of the most widely used data collection tools across the social sciences. Although questionnaire can be used to collect both quantitative as well as qualitative data (as it gives the researcher the scope to solicit both subjective and objective data), it is more appropriate for collection of quantitative data.

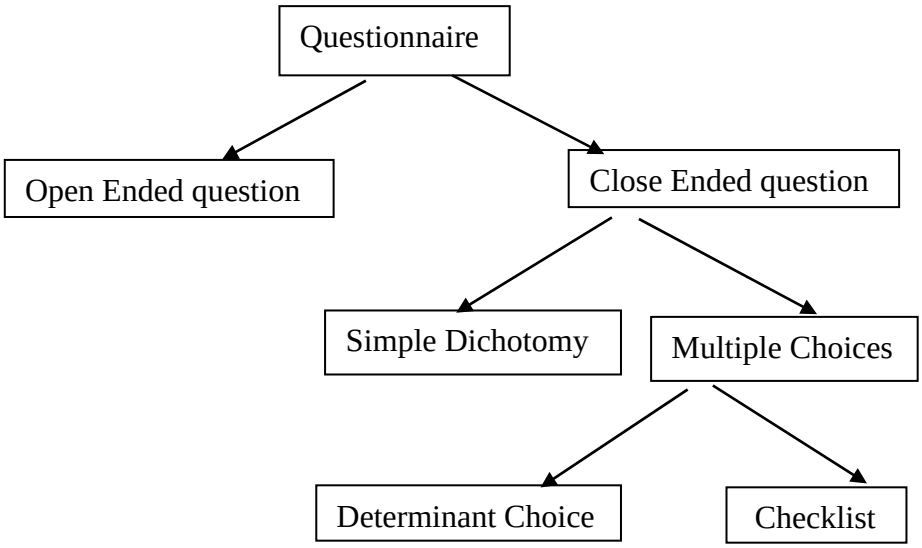
Types of Questionnaires:

There are mainly two types of questionnaires, namely structured and unstructured questionnaire. The idea of administering structured questionnaire was pioneered by Francis Galton. The utility of structured questionnaire has a close relationship with quantitative approach of addressing a research problem. It includes pre-coded questions with pre-defined possible ranges of response alternatives administered by researcher in order to collect a particular type or standardized data from respondents. Census questionnaire is a typical example of a structured questionnaire in which demographic information are collected from every household.

Unstructured questionnaire is formulated around open ended questions that do not require pre-defined categories; it solicits qualitative data where respondents express (in their own words) what is important to them. Another type of questionnaire is also used in social sciences known as quasi-structured questionnaire which is a mixture of both structured and unstructured questionnaire with close-ended and open-ended questions thus eliciting both quantitative and qualitative data.

Types of Questions in Questionnaire:

Let us now understand the different types of questions in questionnaire with the help of a flow chart.



In Open Ended questions the respondent answers in his or her own words. In Close Ended questions the respondents select one or more options from pre-determined set of responses prepared by the researcher. Close Ended questions are further divided into Simple Dichotomy and Multiple Choices. Questions with only two response alternatives (like good or bad, yes or no) are known as Simple Dichotomy. Questions with more than two response alternatives are called Multiple Choices. Multiple Choices questions can also be divided into two types namely Determinant Choice and Checklist questions. In Determinant Choice respondent must select only one of the response alternatives. Checklist questions are such types where respondents select more than one of the response alternatives or as many responses as applicable.

The following points are to be kept in mind by researchers while framing questionnaires -

- Questions must be brief, simple, concrete and without bias.
- Unnecessary jargon or ambiguous words must be avoided along with acronyms and abbreviations.
- Double negatives and double barreled questions are to be avoided.
- Hypothetical questions should be avoided.

CHECK YOUR PROGRESS – D

1) Elaborate the types of questionnaires researchers use for data collection.

2) What are the different types of questions one can find in a

11.7 INTERVIEW

The word interview is derived from Latin and middle French words that mean to “see between” or “see each other”. Pauline V. Young elaborated that the objectives of interview may be exchange of ideas and experiences, eliciting pertinent and wide range of data on a specific topic, in which the interviewer aims to rehearse the past, define the present and foresee future possibilities from the information provided by the interviewee. Interviewing is considered as an obtrusive method of extensive as well as intensive data collection in which the research participants are well aware of the fact that they are being studied by the researcher with specific pre-defined objectives. It is one of the most frequently used tools for data collection, especially in case study and survey. It is often used in addition to observation technique in order to verify information as well as to make value addition through planned correspondence with the pre-defined

research participants. There are different types of interviews used by researchers to solicit pertinent data from interviewees, ranging from in-depth follow-up questions to highly structured questionnaires. An interview can be structured, unstructured or semi-structured, depending upon whether a pre-formulated and sequenced set of questions are administered or not to collect information from respondents.

Structured interviews comprise standardized close-ended questionnaires with pre-determined sets of pre-sequenced questions and pre-coded responses (often coded numerically) to collect 'direct facts' from the respondents in much lesser time. Although such questionnaires have greater coverage in collecting quantitative data, they lack in-depth insights. Moreover, structured interviews are not flexible as new questions cannot be added impromptu by the interviewer during the time of interview. An unstructured interview generates qualitative data through conversational form (which Patton defines as 'go with the flow' conversational style) in which the interviewer spontaneously pose open-ended questions to the interviewee in order to elicit data pertaining to cognitive processes, social worlds and experiences. Semi-structured interviews combine the style of both structured and unstructured interviews in which some of the questions are close-ended and pre-determined, and the rest are open-ended and not pre-planned but arise spontaneously in a free-flow conversation between the interviewer and interviewee. It ensures objective comparison of responses collected from different respondents along with in-depth exploration of pertinent points.

CHECK YOUR PROGRESS – E

1) State the importance of interview in research as a data collection method.

2) What are the different types of interview used in social sciences for data collection?

11.8 SUMMING UP

In this Unit you have come to know about different data collection methods frequently used by researchers in social sciences. You have learnt about the importance of selecting appropriate methods for data collection pertinent to research topic. As you have come to know about the application and nuances of different data collection methods, it will help you in appropriately and effectively designing data collection tools for your research paper, dissertation and/or thesis.

11.9 QUESTIONS

1. Elaborate the importance of appropriate data collection method in the research process.

2. Elucidate the different types of data collection methods with suitable examples.

3. State the difference between participatory and non-participatory observation.

4. Prepare a flow chart explaining the different types of questions used in questionnaire with the help of examples.

5. Analyse the importance of Focus Group Discussion and interview as tools of qualitative data. q

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MODULE IV: REPORT WRITING AND ETHICS IN RESEARCH

UNIT 12: DATA ANALYSIS AND STATSTICS

UNIT STRUCTURE

12.1 INTRODUCTION

This unit is based on the significant part of your research work. From the previous units you have learnt different methods of research, sampling techniques and data collection methods, etc. Data analysis part comes after collection of data which may be primary or secondary data. In quantitative research, different statistical methods are used for analysing the data collected. This unit focuses on discussing different statistical methods of analysing data such as measures of central tendency, co-efficient of correlation, etc. Based on the results derived from your data analysis , you will find the answers to your research questions.

12.2 OBJECTIVES

A thorough study of this unit shall enable you to

- Understand the different statistical measures of analysing data such as Descriptive and Inferential Statistics, Tabulation and Codification, Measures of Central Tendency , Co-efficient of correlation ,
- Know Statistical Package for the Social Sciences SPSS and its uses in research

12.3 DESCRIPTIVE STATISTICS

12.3.1 Definition

Descriptive statistics are used to describe basic characteristics of a set of data. This type of statistics summarise a given set of data which can be representation of the entire population or sample of a population. Descriptive statistics are useful to simplify the large and complicated data from which it becomes easier to interpret it and derive conclusions. In other words, descriptive statistics help in describing and understanding of a specific set of data by giving short summaries of huge data collected from the entire population. We can also say, it précises the massive data in meaningful manner. These descriptive statistics can be applied in many ways in your research , these are:

i. Summarising the data in the form of the central tendencies
ii. Pointing out the variability and dispersion present in the collected data
iii. Diagnosing the nature of distribution normal or non-normal
iv. Describing the relative position of the score earned on a test and measure
v. Showing the degree of association or correlation existing among the different set of data

vi. Predicting the change in one variable in some systematic way with the change in the other variable.

The most popular types of measures in descriptive statistics are: central tendencies and measures of variability (spread). Measures of central tendency include the mean, median, and mode, while measures of variability include the standard deviation, variance, the minimum and maximum variables, and the kurtosis and skewness.

12.3.2 Features of Descriptive Statistics

- Descriptive statistics summarizes or describes characteristics of a data set.
- Descriptive statistics consists of two basic categories of measures: measures of central tendency and measures of variability or spread.
- Measures of central tendency describe the centre of a data set.
- Measures of variability or spread describe the dispersion of data within the set.

12.3.4 Measures of Central Tendency

The most familiar types of descriptive statistics are measures of central tendency. These measures describe the data through a single value of the data collected from the population or the samples which reflects the centre of the data distribution. In other words, these central tendencies indicate the central point of the distribution of data and around this central location or middle value, the tendency of the data distribution can be measured. These measures of central tendencies are : the mean, median, and mode, which are used at almost all levels of mathemetics and statistics.

MEAN:

The mean is basically called average, which is calculated by adding all the numbers within the data set and then divided by number in total within data set. In order words, mean is calculated through adding all the values of the data set and dividing the total value by the number of values in the data set. For example, if "X" is the value and "n" is the total number values, then mean will be-

$$\text{Mean} = \frac{X_1 + X_2 + X_3 \ldots\ldots\ldots\ldots Xn}{n}$$

Example of mean: what is the mean of 2, 7 and 9?

Solution: Add the numbers: 2 + 7 + 9 = 18.

Divide by how many numbers (i.e. we added 3 numbers): 18 ÷ 3 = 6

So the mean is 6

MEDIAN

Median is the middle value in the given set of data. Median splits the data set in half and the measurement of this middle value depends on whether the date set has even number or odd number of values. To calculate the median we first need to arrange the numbers in ascending or descending order then only we can calculate median i.e. middle value.

Example of Median:

1. During the first marking period, Rajiv's math quiz scores were 90, 92, 93, 88, 95, 88, 97, 87, and 98. What was the median quiz score?

Solution: Ordering the data from least to greatest, we get:

87, 88, 88, 90, **92**, 93, 95, 96, 98

Answer: The median quiz score was 92. (Four quiz scores were higher than 92 and four were lower.)

2. Find the median: 3, 13, 7, 5, 21, 23, 23, 40, 23, 14, 12, 56, 23, 29

Solution: When we put those numbers in order we have:

3, 5, 7, 12, 13, 14, 21, 23, 23, 23, 23, 29, 40, 56

There are now fourteen numbers and so we don't have just one middle number, we have a pair of middle numbers:

3, 5, 7, 12, 13, 14, 21, 23, 23, 23, 23, 29, 40, 56

In this example the middle numbers are 21 and 23.

To find the value halfway between them, add them together and divide by 2:

21 + 23 = 44
then 44 ÷ 2 = 22

So the Median in this example is 22.

MODE

The mode of data set is the number or value which appears frequently in the data set. In other words, the mode is the value that comes in highest number of times (frequency).

Let us find the mode of the following data-

22, 16, 32, 22, 45, 22, 52, 22

In the above data set, 22 is the value which is appearing frequently in the given set of data.

When it is difficult to understand the large set of data then descriptive statistics help to summarise it in a systematic manner. A student's grade point average (GPA), for example, provides a good understanding of descriptive statistics. The idea of a GPA is that it takes data points from a wide range of exams, classes, and grades, and averages them together to provide a general understanding of a student's overall academic abilities. A student's personal GPA reflects his mean academic performance.

12.4 INFERENTIAL STATISTICS

Previously we discuss about the descriptive statistics which helps in describing and summarising the large set of data. After description of data, the task may not end here. Here we use inferential statistics which is the first step taken for carrying out analysis of the collected data to enable the researcher to answer his research questions or address the purpose of the study. We need to derive necessary inferences or conclusions from the outcomes of the descriptive analysis of the data. Inferential statistics allows us to make predictions or inferences from the data. We can make generalisations about population from sample data.

Example: we might stand in a book shop to ask a sample of 50 people whether they like a particular book or not. We could make a bar chart of answer yes or no (that would be descriptive statistics) or we could use our research (and inferential statistics) to reason that around 75-80% of the population (all book readers in that shop) like that particular book.

In inferential statistics there are two main approaches:

1. **To draw inferences about the parameters of the population from the sample statistics:** in research, researcher can make use of

sample drawn from the population data which is collected for their research. A researcher makes use of the sampling for the simple reason that it is convenient, practicable and economical to employ a representative sample for the research study than the actual population.[1] Even researcher can make use of statistics from sample in terms of mean, median, mode, standard deviation and measures of correlation.

2. **To draw inferences regarding hypothesis testing:** Inferential statistics also help the researcher in their research, to test the research hypothesis/hypotheses set in the beginning of the research study before the data collection task. Researcher can also use specific statistical tests like "t" test, Chi square test and other non-parametric tests.

12.4.1 Hypothesis:

"A well-planned hunch, guess or working assumption written in the form of a declarative statement for answering a research question the truth of which is ascertained by a researcher through his research study."[2]

According to Kothari (1990), the hypothesis starts from a proposition, which is defined as a statement about a concept that may turn out to be true or false when referred to observable phenomena.

According to Kerlinger (1973, 201), hypothesis can be classified into two general categories, which are:

[1] S.K. Mangal and Shubhra Mangal " Research Methodology in Behavioural Science", PHI Learning private limited 2015. Pp 605.
[2] S.K. Mangal and Shubhra Mangal " Research Methodology in Behavioural Science", PHI Learning private limited 2015. Pp 260

a. Substantive Hypothesis

b. Statistical Hypothesis

Substantive hypothesis according to Best and Kahn (2006) is a formal affirmative statement predicting a single research outcome, a tentative explanation of the relationship between two or more variable.

Substantive hypotheses can be classified into two categories:

1. Directional research hypothesis: these are those hypothesis which are capable of predicting the direction of difference that exists between the variables used in the study.

2. Non-directional research hypothesis: these are those hypothesis in research, which although can predict the presence of the difference between the variables of the study. But they do not say anything about the direction of difference.

Statistical Hypothesis

A statistical hypothesis is an assumption or prediction about the population parameter, that assumption can be true or false. Statistical hypothesis is also known as null hypothesis, which is always opposite of alternate hypothesis. Null hypothesis is characterising with a declarative statement provided in a negative or null form. Null hypothesis is denoted by H_0 and alternate hypothesis by H_1.

H_0: The null hypothesis: It is a statement about the population that either is believed to be true or is used to put forth an argument unless it can be shown to be incorrect beyond a reasonable doubt. Null hypothesis can also be defined as a proposition with no differences among the variables.

H_a: The alternative hypothesis: It is a claim about the population that is contradictory to H_0 and what we conclude when we reject H_0.

These are the following steps of research process where formulation of hypothesis is an important component:

1. Forming a question
2. Performing background research
3. Creating a hypothesis
4. Designing an experiment
5. Collecting data
6. Analysing the results
7. Drawing conclusions
8. Communicating the results

Example:

H_0: The medicine reduces cholesterol by 25%.

H_a: The medicine does not reduce cholesterol by 25%.

12.5 CODING AND TABULATION

Coding is a process of converting large qualitative data in the questionnaire into numerical form and presenting it on the coding matrix. We can also say it is a process of assigning some symbols, number and alphabets to the answer or qualitative data so that the responses can be categorised into a limited number of classes or categories. This process reduces the huge quantity of data to manageable proportions and makes it possible to further the process of analysis more systematically.

To categorise large data into classes should be appropriate for research problem. The class should be defined in terms of a concept. The decision of coding usually is taken at the time of designing stage of questionnaire so that the likely responses to questions are pre-coded. Coding of open ended questions is more difficult and quite easy for close ended questions in

questionnaire. For a closed ended or structured question, the coding scheme is very simple and designed prior to the field work.

For example: What is your sex?

1. Male 2. Female

We may assign a code of `0' to male and `1' to female respondent. These codes may be specified prior to the field work and if the codes are written on all questions of a questionnaire, it is said to be wholly pre-coded.

Tabulation in the research after collection of the data, we usually edit the data, then coding and in the last we put data into tabulation form. Tabulation is systematically arrangement of statistical data in tabulation form (rows and columns).

When the large data is collected, then it becomes necessary for the researcher to arrange it in some kind of concise and logical way. Thus tabulation is the process of summarising raw data and displaying the same in compact form for further arrangement of data in columns and rows opening those for analysis and interpretation.

There are three types of tabulation

1. one way tabulations (one characteristic feature or one category of data)
2. two way tabulations (two characteristics feature or two categories of data for comparative analysis)
3. three way tabulations (three characteristic features of three categories of data for inter variable comparative analysis)

12.6 CO-EFFICIENT OF CORELATION

Co-efficient of correlation is used in the research to measure how strong a relationship is between two variables. The correlation coefficient is a measure in statistic which calculates the strength of the relationship between the relative movements of two variables. We can also say that there are several types of coefficient of correlations, which is most

commonly used in statistics: Pearson's correlation (also called Pearson's *R*) is a correlation coefficient commonly used in linear regression. This measures strength and direction of the linear relationship between two variables. It cannot capture nonlinear relationships between two variables and cannot differentiate between dependent and independent variables.

The value range in coefficient of correlation is always between -1.0 to 1.0. If the calculated number is greater than 1.0 or less than -1.0 it means that there is an error in the correlation measurement. When correlation value is -1.0 it means it is perfect negative correlation, this shows that the variables move in opposite directions - for a positive increase in one variable, there is a decrease in the second variable. When the correlation value is 1.0 then it means that it is a perfect positive correlation. For a positive increase in one variable, there is also a positive increase in the second variable. A correlation value 0.0 shows no relationship between the movements of the two variables.

12.7 SPSS

The full form of SPSS is Statistical Package for the Social Sciences, and it is very useful tool for researcher for doing statistical data analysis. SPSS software was launched originally in 1968 by SPSS Inc. and later in 2009 it was acquired by IBM. Basically this software package was created for the management and statistical analysis of data in social sciences.

The advantages of SPSS are it can be used for health research, market strategy, survey, government entities, education, marketing, data miners, censuses, and many more for the processing and analysing of survey data.

There are some common statistical methods which we can use in SPSS, including:

- For Descriptive statistics, including methodologies such as frequencies, cross tabulation, and descriptive ratio statistics.
- For Bivariate statistics, including methodologies such as analysis of variance (ANOVA), means, correlation, and nonparametric tests.
- For Numeral outcome prediction such as linear regression.
- For Prediction for identifying groups, including methodologies such as cluster analysis and factor analysis

In addition to these four programs mentioned above, SPSS also provides results for data management, which also allows researchers to perform case selection, create derived data, and perform file reshaping.

SPSS also offers the feature solution of data documentation, which allows researchers to store a metadata dictionary. This metadata dictionary acts as a centralized repository of information pertaining to data such as meaning, relationships to other data, origin, usage, and format.

ASSESS YOUR PROGRESS

1. Distinguish between descriptive statistics and inferential statistics?

2. What is a hypothesis? Explain the different types of hypothesis with their relevance, formation and purposeful usage in research. _____

12.8 SUMMING UP

Descriptive statistics are used to describe and give understanding of specific set of lengthy data in summarise way. The measures of central tendency are the most common method used in descriptive statistics. Inferential statistics allows us to make inferences from the data. We can make generalisations about the population from the sample data. Hypothesis testing is known method of inferential statistics.

In coding a researcher assign symbol or number to data collected for analysis. After coding of the data we put data into tabulation form, which is systematic arrangement of statistical data into tabulation form (rows and columns).

Co-efficient of correlation tells us about how strong is a relationship between two or more variables. SPSS is a statistical package for the social science, which is used for the management and statistical analysis of data in social science.

12.9 QUESTIONS

1. Which is the most common measure used in Descriptive statistics and explain in details with example?
2. Explain Hypothesis and their types in detail with example.
3. Explain Coding and Tabulation in research study and give example.
4. What are the advantages of SPSS?
5. Write a brief note in Co-efficient of Correlation.

12.10 RECOMMENDED READINGS

Kothari, C. R. (2011). *Research Methodology: Methods and Techniques* (2nd revised edition). New Age International Publishers, New Delhi.

Kothari, C. R. (2011). *Research Methodology: Methods and Techniques* (2nd revised edition). New Age International Publishers, New Delhi.

Ranjit Kumar (2015). *Research Methodology: A Step by step guide for beginners*. Pearson.

Mangal, S. K and Mangal, S. (2013). *Research Methodology in Behavioural Sciences*. PHI Learning Pvt. Ltd.

UNIT 13: WRITING RESEARCH REPORT

UNIT STRUCTURE

13.1 INTRODUCTION

Writing the research report is the final destination point of the researcher's research journey. Research report is a well written and organized document, which explains what has been studied, what was the aim and how it has been studied to reach the aim of the research. In other words, we can say that research report is a written description of a research study which includes a clear statement of the purpose of the research, a review of the relevant literature, description of the research methods which have been used in the study, discussion and interpretation of data, an analysis of the data, a summary of the research, further recommendation and conclusions of the research.

A research report is a compilation of your research study. In other words, the research report is a record of the researcher where he/she reflects what they have done in the research. The basic objective of the research report is to establish the results and finding of the research study. 'In a report, each important term pertaining to the research problem is defined, limiting

factors are recognized, procedures are described, references are carefully documented, results are objectively recorded, and conclusions are presented with a scholarly spirit. It is a written document prepared by a researcher for sharing ideas, information and experiences with others.'[3]

13.2 OBJECTIVES

After studying this lesson, you will be able to

- Understand the structure of a Research Report
- Learn the style guide for Referencing and Citations

13.3 PURPOSES OF A RESEARCH REPORT

A good research report is always providing the following types of information about the research study:

i. Why the particular topic was undertaken? Here in this point, it tells about the rationale, significance and purpose of the study.
ii. What was the aim of the study? It explains about the objectives of the study and also explains the hypothesis of the study.
iii. What was planned? It explains about the research design and planning of the study to acquire the objectives.
iv. What has been done in the study? It tells about the procedures and methods followed in the research study.
v. What has been found? Here it clearly tells about the acceptance and rejection of the research hypothesis and familiarises the readers with the conclusions and findings of the study.
vi. How the present study is helpful for others? In this point research reports discuss and points out how the finding of research study will be helpful to the audience.
vii. How the present study is related to other knowledge in the area? According to the (Gravetter and Forzano, 2003) a good research

[3] 'Research Report: Various Components and Structure' unit 22, pp. 28

study does not stand alone, rather it grows out of an existing body of knowledge and adds to that body of knowledge, the research report should show the connections between the present study and past knowledge.

13.4 STRUCTURE OF THE RESEARCH REPORT

The format of research report depends on the types of research report writing such as (i) writing report of a research dissertation or thesis and (ii) writing of the report in the form of a research paper. A research report specifically tells us about what to write and how to organize the information in a systematic structure. The most important feature of the research report is that it is based on a formal structure of different sections. For example, the literature review section of the report provides the review of the existing studies which are relevant to the research topic. Likewise, the methodology section explains the research methods used in collecting data for analysing and interpreting the findings. This report is written in single narrative style and each section has some purposes. Understanding the purposes of the each section, you need to structure your information and use the correct writing style.

13.4.1 Research Report Writing for Dissertation and Thesis Work

For the presentation of the research report, there are several styles, formats, and style manuals. All these manuals provide guidelines and specific rules to the researcher for writing a research report. Every university and institute has its style of writing a research report, and the researcher has to follow that style. The following three are basic components of a research report-

i) Preliminary section,

ii) Body of the report or text, and

iii) Reference section.

Each main part consists of several sub-sections. The general format of the research report as described by Koul in 1986 is given below:

- **Preliminary Section**
  1. Title page
  2. Preface, including acknowledgements
  3. Table of contents
  4. List of tables
  5. List of figures, maps or illustrations

- **Body of the Report or Text**

  a. Introduction

  1. Statement of the problem
  2. Review of Literature
     a. Introductory section
     b. Main body section
     c. Critical analysis and summary section
  3. Relation of present problem to theoretical formulation of the previous research
  4. Significance of the problem
  5. Limitations of the study
  6. Objectives of the study
  7. Statement of hypotheses/ Research Questions
  8. Operational definition of Definition of important terms and concepts

  b. Design of the Study

  1. Population of the study
  2. Sampling procedure
  3. Instruments used for data collection

4. Task and materials
5. Independent and dependent variables
6. Procedures

c. Analysis and Interpretation of the Data

1. Text
2. Tables
3. Figures

d. Conclusions and Summary

1. Brief statement of problem and procedures
2. Principal findings and conclusions with their practical implications
3. Suggestions and recommendations for further research

- **Reference Section**
  1. Bibliography
  2. Appendix
  3. Index

Title page: the title page is the first page of the research report. It is unnumbered in the manuscript and characterised by the following type:

1. The title of the study
2. The name of the researcher
3. The researcher's institutional affiliation
4. The name of the university to which the research report is being submitted.

Acknowledgements

Acknowledgment in a research report deals with giving credit and acknowledgements to others who have contributed, helped, and assisted you in conducting the study and the production of the research report. It

should be brief and to the point in expressing obligation to the persons and institutions for their valuable guidance.

Table of Contents

The table of contents of the research report is the provided information about the exact location of text, tables, figures, and chart. It includes:

1. The title of the chapters and their subdivision along with page number
2. List of tables
3. List of figures
4. List of appendices
5. Reference

Introduction

Your research report writing starts with an introduction chapter. Here you should introduce your topic to readers. In this introduction section, you should write precisely about your topic, what you are going to research and why it is worthy of researching. The introduction in research report is a summary of the project proposal explaining what you are interested in and why and how you intend to do the study, etc. Introduction part includes statement of problem, analysis of previous research, relationship between present topic and previous research, significance of the study, limitations of the study, specific objectives and research questions of the study, statement of hypothesis (if any), aim of the study, relevance of the study, and operational definition of the terms/concepts used in the study.

Design of the Study

In this section, we give a description of the methodology and procedures of the study, which is the heart and main body of a research report. This section describes the basic research plan of the research study. The

researcher has provided an accurate description of the population of the study. In sampling procedures, the researcher has to give a detail description of the sampling procedures mentioning the steps and methods used for the selection of subjects from the population of the research study. In instruments used for data collection section, the researcher describes any tool or material such as questionnaire, standardized test, rating scale, interview schedule, etc. used for the collection of data to answer the research questions of the study. Task and material subsections talk about mentioning the type of activities and materials used on the part of the subjects for participating in certain activities, especially related to experimental or field studies. The researcher has to describe the independent and dependent variables involved in the research study. The researcher has to mention the name of different types of variables and the methods used for the measurement of the dependent variable, along with the measure for exercising control over the extraneous or confounding variables. The procedure subsection is meant for the description of the step by step process used for the execution of the research study. According to Tuckman (1999), the details may include:

i. The specific order in which steps are undertaken
ii. The timing of the study
iii. The instructions given to subjects
iv. Briefing, debriefing, and safeguards.

Analysis and Interpretation of the Data

Data collection have been explained in the previous chapter. In this chapter, we analyse and interpret the data concerning each of the research questions being raised in the research study. ‘Data analysis and interpretation is the process of assigning meaning to the collected information and determining the

conclusions, significance, and implications of the findings.'[4] This chapter is significant in the research process because without analysis and interpretation of data research is incomplete.

According to C.R.Kothari (1989), 'The term analysis refers to the computation of measures along with searching for patterns of relationship that exist among data-groups.' After data analysis researcher needs to interpret the results for deriving recommendation and conclusions of the study.

Conclusions

The conclusion chapter gives a summary of the entire study including its findings. The crucial feature of the conclusion section is that it explains significance of your study, innovative elements of the study, etc. It includes some essential aspects of your research, and it includes:

- the aim of the research as stated in the Introduction
- it indicates to what extent the objectives of the study have been achieved
- summarises the key findings and outcomes of your research study
- writes limitations of the study and make recommendations for future research
- highlights the significance or usefulness of the research study

In the research report, it is necessary to accompany with an appropriate summary of the research study for providing a handy, overall glimpse or overview of what was aimed, planned, done, and achieved by the researcher in the study. It provides a summary of all the chapters including the need and purpose of the study, the statement of problem and hypothesis, design of the study, tools used for the data collection, the population and sample of the study, procedures of the data collection and

4 https://shodhganga.inflibnet.ac.in/bitstream/10603/8507/11/11_chapter%204.pdf

analysis, results and finding of the study including recommendations and suggestions etc.

Reference Section

The referencing section in the research report comes after conclusion. In this section, the researcher has to provide complete information about the reference cited in the various chapters of the manuscript.

13.5 STYLE GUIDE

In writing the research report , as a researcher you need to give credit to the previous studies from which you have taken ideas or you have replicated some portion of a previous study in your report. You need to give reference to the original authors of the idea you have cited in your study. For that you need to document the source of information you have used in your study. It helps you to avoid plagiarism which is a matter of research ethics.

There are two most often used bibliography styles , which are Modern Language Association (MLA) for the Humanities and the American Psychological Association (APA) for the Social Sciences and other disciplines.

13.5.1 American Psychological Association (APA)

Books Example:

1. Single author

Brunette, I. (2011). *Cartooning: Philosophy and Practice*. Yale University Press, USA.

2. Two authors

Creswell, J. W., & Clark, P. (2009).*Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Sage publications, New Delhi.

Scholarly Journals

El Refaie, E. (2009). Multiliteracies: How Readers Interpret Political Cartoons. *Visual Communication*, vol 8 (2), pp.184–205.

13.5.2 Modern Language Association (MLA)

Books Example:

1. Single author

Pollan, M. (2006). *The omnivore's dilemma: A natural history of four meals*. New York, NY: Penguin Group.

1. Two authors

Use the ampersand (&) instead of "and."

Bell, J. K., & Cohn A. (1968). . . .

Scholarly Journals

Bagchi, A. (1996). Conflicting nationalisms: The voice of the subaltern in Mahasweta Devi's *Bashai Tudu*. *Tulsa Studies in Women's Literature, 15*(1), 41–50.

REFERENCE	**APA**	**MLA**
Magazine	Poniewozik, James. "Election 2000: TV Makes a Too-Close Call." *Time*, 20 Nov. 2000, pp. 70-71.	Poniewozik, J. (2000, November 20). Election 2000: TV makes a too-close call. *Time, 156*(21), 70–71.
Daily newspaper	Krugman, Paul. "Fear of Eating." *New York Times*, 21 May 2007, late ed., p. A1.	Krugman, P. (2007, May 21). Fear of eating. *New York Times*, p. A1.

Book or film review	Seitz, Matt Zoller. "Life in the Sprawling Suburbs, If You Can Really Call It Living." Review of *Radiant City*, directed by Gary Burns and Jim Brown, *New York Times*, 30 May 2007, p. E1.	Seitz, M. Z. (2007, May 30). Life in the sprawling suburbs, if you can really call it living [Review of the film *Radiant City*, directed by Gary Burns and Jim Brown, 2006]. *New York Times*, late ed., p. E1.
Entire Website	*The Purdue OWL Family of Sites*. The Writing Lab and OWL at Purdue and Purdue U, 2008, owl.english.purdue.edu/owl. Accessed 16 July 2018.	The Writing Lab and OWL at Purdue and Purdue U. (2008). *The Purdue OWL Family of Sites*. Retrieved July 16, 2018, from http://owl.english.purdue.edu/owl/
Page from Website	Shiva, Vandana. "Bioethics: A Third World Issue." *Nativeweb*, http://www.nativeweb.org/pages/legal/shiva.html. Accessed July 14, 2018.	Shiva, V. (2006, February). Bioethics: A third world issue. *Nativeweb*. Retrieved from http://www.nativeweb.org/pages/legal/shiva.html

ASSESS YOUR PROGRESS

1. Explain the different sections of writing a research report .

_____

_____

13.6 SUMMING UP

In this unit, our main focus was on how to write a research report. At the outset, we defined what a research report enumerates the significance of a research report. Different types of research reports like research articles, abstracts, theses and dissertations and project reports were discussed. You have learnt the format of a research report which consists of the preliminary section, the body of the report and the reference section. There are three major sections in a research report. These are the beginning, the main body and the end.

13.7 QUESTIONS

1. Write down the few points about the meaning of research report.
2. State the reason for writing the research report.
3. Which chapter of research report are being called heart of the research study? Explain the main points of that chapter.
4. Explain the difference between MLA and APA style referencing with examples.

13.8 RECOMMENDED READINGS

Baumgartner, A. Ted., Strong, H. Clinton, and Hensley, D. Lany (2002) *Conducting and Reading Research in Health and Human Performance.* Third Edition, San Francisco: McGraw Hill.

Bell, J. (1999) *Doing Your Research Project, A guide for first-time researchers in Education bd Social Science.* Third Edition, New Delhi: Viva Books Private Ltd.

Blaxter, L., Hughes, C., and Tight, M. (2002) *How to Research*. First South Asian Edition, New Delhi: Viva Books Private Limited.

Slade, C. (2000) *Form and Style: Research Papers, Reports, Thesis*. 11th ed., Boston: Honghton Mifflin.

UNIT 14: ETHICS IN RESEARCH

UNIT STRUCTURE

14.1 : INTRODUCTION

This unit is based on different aspects of ethics in research which gives you an understanding of ethical principles of conducting research. Ethics in research defines all the moral and legal guidelines that a researcher has to follow discriminating between what is right and wrong within these two frameworks. A researcher needs to follow some well-defined rules while collecting data and analysing the findings. It is about maintaining moral values which implies avoiding any kind of deceptions in terms of conducting experiments as well as involving the respondents in the research. In other words, ethics in research can be explained from the aspects of implicating approaches of designing and conducting research, treating the respondents in research without harming their dignity and

privacy, writing the research report, etc. which will be discussed in details below. As a researcher in Humanities and Social Sciences , you need to consider the rights and privacy of the participants of your research who are the part of the larger society. Therefore as a researcher you need to have prior understanding of the socio-cultural and political values of the respondents for an unbiased scientific investigations.

14.2 : OBJECTIVES

After competition of this unit , you shall be able to-

- Understand the meaning of ethics in research
- Comprehend the significance of ethics in research
- Learn the concept of privacy and plagiarism in research

14.3 :ETHICS IN RESEARCH

Ethics in research includes the guidelines of conducting research which help the researcher to follow for an unbiased as well value-free research. Value-free research implies that the research should not reflect the values or the beliefs carried by the researcher. In other words, the researcher should not follow his or her intuitions for manipulating the results in order to establish his or her implicit ideas. However, in terms of ethical aspects in treating the respondents of the research , the following basic principles will help to understand the guidelines you need to follow while conducting your research-

i. **Autonomy:** The principle of autonomy in research implies that the participants should exercise their own autonomy while responding to the scientific inquiry. Autonomy in terms of the respondents' rights, values, decisions which should be maintained by the researcher. The researcher should not interfere in the decisions if the respondents deny to participate in the study.

ii. **Nonmaleficence:** According to this principle , the researcher should not harm the participants involved in the research while conducting

the study. Any intentional harming of the respondents violates research ethics which may include harming security of the respondents. For instance, sometimes for security reason you cannot disclose the names of the respondents.

iii. **Beneficence:** This principle implies that unlike the principle of nonmaleficence, the principle of beneficence principle of research ethics indicates that the researcher should consider the welfare of the participants as a goal of the research. According to this principle, the researcher is obliged to remove the existing harms and should focus to bring welfare to the participants.

iv. **Justice:** Justice as an ethical principle in research implies that the researcher should consider all the beneficiaries of the research equally. In other words, while formulating any policies or programmes which are the results of any research , there should be equal benefits for all. Positive results should be shared equally with all the participants without any discriminations or injustice.

In context to maintaining ethics while dealing with the participants the following guidelines should be followed by the researchers which are based on the principles discussed above-

i. Allowing informed consent and voluntary participation of the respondents is the key of exercising ethical principle in research. It means you as a researcher do not involve the participants without their knowledge and consent.

ii. You should not hide the purpose of the research and any kind of deceptions in terms hiding true nature of the research is unethical.

iii. You should not invade any kind of privacy of the participants and should respect their rights to exercise their autonomies. As a researcher you should also respect the differences exist among the participants.

iv. You need to maintain fair treatment of the participants in terms sharing benefits among all the participants.

Regarding ethics in research there are two other aspects such as concealment and deception which the researcher should avoid while doing research. The concept of concealment in research means deliberately withholding information from the participants. On the other hand, deception means deliberately providing false information to the participants. The basic purpose of such unethical actions of the researchers is to get consent from the target population to participate in the scientific investigation. But, such actions of withholding or providing false perceptions creates ethical issues , though many researchers argue for applying deception in experimental research yet providing false information may harm the participants which is again against the principle of beneficence in research ethics.

On the other hand, the researchers need to follow certain ethical principles in analysing the data and writing the report which are discussed below-

i. The researcher should not tamper with the data collected and while analysing the data it should not be fabricated or altered. The researcher needs to be careful in analysing the data to avoid any kinds of error which may affect the results.
ii. Plagiarism is strictly unethical in research which implies that researcher cannot reproduce research works done by others without giving proper credit to the original authors. This concept of plagiarism will be discussed in detail in the later part of this unit.
iii. Researcher should not conceal any information which can influence the interpretation of data. Withholding information for manipulating data in the interpretation is unethical in research.
iv. The final ethical principle that a researcher should follow is that the conclusion should be derived in consistent with the data collected. In other words, the researcher should draw the conclusions without

distorting the data in order to fit with the biased point of view or any theoretical lens on which the study is based on.

14.4 : IMPORTANCE OF ETHICS IN RESEARCH

Importance of ethics in research cannot be disregarded for many reasons. Maintaining ethics in research makes a researcher accountable for its outcomes. Following ethics in conducting research ensures credibility of the study with high ethical standards. The significance of ethics in research is discussed below-

- Ethics in research is important to avoid any kind of fabrication, falsification or misrepresentation of data which may harm the validity of the study.
- Following ethics in research encourages the researcher to maintain objectivity of the research which implies that the researcher avoids any kind of biasness in any of the steps of conducting research such as data collection, data analysis, data interpretation, etc.
- It promotes different moral and social values such as researcher's social responsibility, protecting human rights, public welfare in terms of health and safety, etc.
- Ethics in research helps in expanding knowledge through adding new form of knowledge to the existing one as the researchers are obliged ethically to avoid duplication of previous studies. As a result of such ethical guidelines the process of knowledge creation gets expanded and it enhances the scope of a particular research area.

14.5 : PRIVACY: AN IMPORTANT ETHICAL ISSUE IN RESEARCH

Privacy as an ethical issue in research deals with guiding the researchers in treating the participants of a scientific inquiry. Protecting privacy of the participants specially in case of survey research or ethnographic research, you as a researchers need to keep in mind that any personal details of the

participants should be protected for restraining any harm to them. There are two main approach of protecting privacy of the participants, these are anonymity and confidentiality. Anonymity implies that the researcher assures the participants of hiding their identity while publishing their opinions. It encourages the participants to take part in the investigation without any hesitations and they easily get ready to express their opinions or give responses to the questions being asked. Anonymity helps when the participants are reluctant to give their opinion specially in case of research problem which is controversial in nature. For example, if you are conducting a research on the media coverage on communal violence and your research objectives demands to consider the perspective of the community members of the both communities indulged in the violence, it may happen that the respondents may not feel safe to express their opinions or may give some kind of politically correct opinions which will affect your findings. In that situation, assuring anonymity will help you to encourage the community members to freely express their opinions without any fear and without being biased.

On the other hand, confidentiality is applied for protecting the privacy of the participants when it becomes difficult to avoid one's identity as an individual. For instance , in interviewing a respondent using questionnaire as a research tool, the researcher may need to mention the designation or any particular identity of the respondents without publicly disclosing their names. For example, if you are conducting a study on the status of higher education in your state and you are conducting interviews among the teachers of a college or university, it may happen that you need to hide the names of the respondents and you will simply address the respondents as teachers from a particular institution. These two terms anonymity and confidentiality is not synonymous in context to ethics in research. The basic difference between these two is that anonymity does not relate to any single aspect of a person which is a part of his identity. But, confidentiality implies that the researcher can disclose the respondent as an individual who

belongs to particular community or any other identity he or she holds without mentioning the name of the particular respondent.

14.6 : PLAGARISM: AN IMPORTANT ETHICAL ISSUE IN RESEARCH

Plagiarism in research is against the moral obligation of a researcher which implies reproducing a research work of others without giving credit to the original authors. Plagiarism in research can be simply defined as unauthorised use of academic works and publishing it as one's own works. It is an infringement of copyright which comes under legal purview for stealing author's right to the ownership of work. When a researcher copy words or sentences from other's works and also steal ideas without consent and without acknowledging the original author, it is considered as a plagiarised work. Nowadays, it has become easier for researcher to plagiarise other's works from different internet sources. Research papers which are available in public domain needs not require any permission of the author to use it. But, it should be the ethical and moral value of the researcher to give credit to the original author if he or she is exactly reproducing it. However, plagiarism can happen in many ways including duplicating the works, invalid sources, repetitive research, replication of works, misleading acknowledgements, etc. Duplicating of works means reusing one's own previous works without properly giving credit to the works. Plagiarism in terms of invalid sources happens when researchers do not provide authentic source of the works cited in his or her research. For instance , sometimes researchers may give incorrect or non-existent sources either intentionally or unintentionally. As the principle characteristic of a scientific research is its novelty and lack of such originality in research may lead to loss of credibility of the research work. A question on the credibility of the research may arise when the researcher repetitively produces the same research works including its data, text and uses the same methodology. This kind of repetition of research works is considered as an act of plagiarism which is unethical as per guidelines of a scientific

research. Replications of works implies submitting the same research work for different publications such as in journals, books , etc. On the other hand, misleading of acknowledgement means when in a collaborative research work all the authors are not given credit or attribution and a particular author takes all the credit for a team research work.

There are a few software for plagiarism checking in academia. For instance, Turnitin is one such software which is used for checking plagiarism in research works. Similarly, another software is Urkund which is used to detect the originality of a research work. Once you will submit your research paper/ thesis/ dissertation in these software, it will automatically detect the sources form which you have copied any words or sentences. In order to avoid plagiarism, there are some rules how to use other's work in your research. For instance, there are various citation formats such as APA and MLA which are discussed in the previous unit (Unit 13).

Thus, plagiarism is a critical aspect of maintaining ethics in research and as a responsible researcher you need to understand the importance of following all the ethical and moral guidelines while conducting your study.

ASSESS YOUR PROGRESS

1. Discuss the significance of ethics in research.
2. Mention some measures to protect privacy of a respondent involved in the interview you are conducting for your research.

14.7 : SUMMING UP

From this unit you have understood different ethical aspects which a researcher should follow while conducting research. Ethics in research basically explains the different approaches of doing a scientific research in different stages including collecting data, analysing data, writing the report, etc. At the stage of collecting data , ethics in research is all about treating the participants with respect, dignity and without harming the security of the participants. The researcher should respect the decision of a person if he or she denies to respond to your questions. You as a researcher should provide all the information about the nature of your study and intentionally concealing any important information for persuading the respondents to participate is unethical. However, protecting the privacy of the respondents is another important ethical issue in research which implies that the researcher may require to hide the identity of the respondents through maintain anonymity and confidentiality. Anonymity means hiding the identity of the respondent and confidentiality refers to covering the name of the respondent and may just reveal the identity as an individual such as revealing designation of his or her professional identity. On the other hand, another important aspect of ethics in research is plagiarism which defines the unethical act of coping other's works , ideas and reproducing it as one's own original work. This comes under both moral and legal infringement. Thus, this unit guides you how to make your research work credible without violating any ethical values.

14.8 : QUESTIONS

1. Discuss the concept of ethics in context to research.
2. Explain the concept of privacy in research.
3. What is plagiarism? Discuss some measures of controlling plagiarism in research.

14.9 : RECOMMENDED READINGS

1. Wimmer, R.D & Dominick, J.R. (2014). Mass Communication Research An Introduction. Wordsworth, India.

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