Unit 20

Survey Method

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Learning Objectives

It is expected that after reading unit 20 you will be able to Proceed with organising a mini research project in terms of preparing for data collection

- ❖ Work out the relevance of survey method of data collection for your research
- ❖ Spell out the techniques of carrying out a survey in your own research
- ❖ Gain confidence in pointing out benefits and weaknesses of the survey method to be used by you in your research.

20.1 Introduction

In Block 5 you acquired, whenever required, the skills of carrying out statistical calculations for arriving at significant results from the data collected during research. The question arises as to how do you collect data? What are the different ways of gathering relevant facts regarding the subject of your research? Unit 20 is about one of the ways of collecting facts and figures pertinent to your research. The unit begins with the question of why should one use the survey method of data collection? Next, it goes into the historical background of survey research and explains what is survey research. It mentions the practice of sampling in data collection but does not go into its details because Unit 15 in Block 5 and Unit 21 in Block 6 deal with the subject of sampling in ample detail. The unit discusses how to actually carry out a survey and outlines the advantages and weaknesses of survey research.

Unit 20 is only an introductory note on the important subject of survey method. Units 21,22 and 23 provide you with full details of survey research so that you may actually carry out a survey as part of your mini research project, a requirement for completing MSO 002. I hope that you have selected a topic for your research project and identified its methodology.

20.2 Rationale of Survey Research Method

Social science research techniques are often classified into two categories, namely, qualitative and quantitative. Qualitative research enables us to understand the subtle aspects of social relations. They are particularly useful when one is interested in probing a specific question in depth, its meanings and their different interpretations. However, qualitative methods also have their limitations. They are, for example, more suitable when research is being carried out in a small setting or is focused on a specific group or community. Qualitative research methods are not very useful when we need to know about macro phenomena, such as the demographic structure of a population or the extent and nature of poverty or disease.

Quantitative methods or survey research enables us to study these questions in a more comprehensive manner. Depending upon the requirement, survey research can be extended to as large an area/ population as a whole nation or even the entire world. Thus when the universe of study is large and the researchers are looking for broad trends or patterns in a given population they often resort to survey methods. In other words, qualitative and quantitative research methods are not opposed to each rather they are complementary. The two can be combined, one enriching the other.

An important feature of survey research is that unlike qualitative methods, which are generally used by specialist researchers, survey research does not have the monopoly of sociologists or economists. Surveys have become part and parcel of modern life, constituting almost an industry

The contemporary world is often described as the "information society". This implies that the flow of information has become its most crucial and central aspect. Recent advances in telecommunication technologies have made this flow of information easier as well as critical for the working of present day society, its politics and its economics.

As is the case with information society, "agrarian" and "industrial" societies too were products of major breakthroughs in technology. Some sociologists think that there have been primarily three revolutions in human history, namely, agricultural revolution, urban revolution and industrial revolution. However, the agricultural and industrial societies are defined primarily in terms of their major economic activity, that is, the nature and means of production. By comparison, the term "information society" has a different connotation. While production (whether agricultural or industrial) continues to be central, it is carried out in a regime of information. In decision-making processes, farmers and factory owners work on the basis of the available information. In some cases the producers themselves generate such information before they plan production of certain commodities.

Similarly, consumers decide about consumption according to the

information that mass media make available to them. Markets depend a great deal on the flow of information. Each time a company decides to launch a new product, it undertakes extensive marketing surveys about the tastes and purchasing powers of potential buyers. Producers are expected to provide information about their products to potential buyers through advertisements, particularly in those media which have a larger impact on the people.

Information, its production and distribution has also become an important sector of the economic system. It provides employment to a large number of people and generates a huge amount of wealth. There are a number of professional organisations and companies in almost every country that carry out surveys for all kinds of clients, from business houses to political parties. This is what we meant when we said earlier that survey is an industry in the contemporary world.

Information has also become crucial for the modern state and the functioning of the democratic systems. Almost the entire policy making process of the modern welfare state is based on information (see Box 20.1).

Box 20.1 Information Gathering by the State

Various organs of the state collect all possible information about its population through periodic censuses and surveys. The Government of India, for example, has a specialist body called National Sample Survey Organization (NSSO), which periodically undertakes sample surveys of the Indian population on various social and economic parameters. The data that it generates is used by various government agencies for formulating policies and programmes. Similarly, the Indian Planning Commission also has a 'programme evaluation wing', which undertakes surveys in order to evaluate the working of various developmental programmes. Other departments of the government also sponsor surveys focused on the issues of their concern. Similar institutions are found in other parts of the world. The point is that the information about populace is essential not only for governance but also for formulating and executing the programmes of development, and as such information is generated through periodically carried out surveys.

Global agencies involved with developmental activities either generate their own information about the economic well being of populations in different parts of the world or depend upon the available data on various subjects (such as poverty, unemployment, health). The World Bank and the different agencies of the United Nations periodically publish reports on different aspects of the existing state of affairs in a given country.

The political process too has become information oriented. Political parties in modern democracy closely monitor "public opinion" and articulate their priorities accordingly. Similarly, citizens in modern democracies also form their opinions about various political parties on the basis of information they get from several sources. Psephologists©, who carry out surveys on 'public opinion' before elections and make predictions (or projections)

about the possible outcome of elections, have come to acquire a respectable place in politics and media. Television channels and newspapers undertake elaborate surveys during election times on the prospects of various political parties and the voting behaviour of people. Similarly, in countries like the United States of America and other Western democracies, the media and the corporations constantly monitor the popularity ratings of their leaders and political parties, both in power and outside.

Besides the fact that surveys have gained in importance in the modern world, they have always been an important research method. They have been used for understanding the emerging trends or patterns in a given population or for testing hypotheses. Some of them may have policy implications, while some may be purely for academic interest. For example, sociologists interested in understanding the process of secularisation may undertake surveys on how often people perform religious rituals in their everyday social, economic and political life.

20.3 History of Survey Research

Though systematically carried out surveys have a short history, rulers in the past have always been interested in finding out what was going on in their states and the condition of their subjects. There are umpteen stories of rulers (or their representatives) going to meet the public, sometimes incognito, with the explicit intent of enquiring about their welfare and any seeds of discontent. This was considered extremely important for proper rule. In ancient times roman emperors polled surveys of their citizens. The Victorians social reformists undertook surveys and interviewed ten to twenty thousand persons for seeking an adequate representation of opinions.

However, survey research in its systematic form began after the Industrial Revolution and urbanisation of Europe. Karl Marx was perhaps the first social scientist to collect information from some key informants about the condition of industrial workers and tried to relate it to his theory of class society and class struggle. On the basis of such data he also tried to quantify workers' exploitation in terms of working hours and wages rates (see Box 20.2 on early surveys).

Box 20.2 Some Early Surveys.

The first systematic survey was supposedly carried out by Henry Mayhew, a Scottish philosopher and social reformer, who wanted to find out about the living conditions in Edinburgh in the early 19th century and asked ordinary people to report on their situation. With reformist zeal, Charles Booth initiated a survey on *Labour and Life of the People of London* in 1886. The findings of his survey were published in seventeen volumes between 1889 and 1902. Around the same time several other surveys were carried out, mostly in Great Britain and elsewhere in the Western world, focusing primarily on the measurement of poverty.

20.4 Defining Survey Research

Survey research is basically a method of gathering information from a population on a given subject. Unlike qualitative research, survey research invariably covers a large population; but it does not imply that it collects information from each and every individual. Statisticians have designed various methods of drawing a representative sample from a given population, which can reveal trends for the entire population.

Quantitative research methods are often classified into two types, namely, census and sample based survey research. When information is gathered from each and every member of the population, or in other words, when all units of the population are covered for information, it is called census. But it is an expensive, lengthy and time-consuming process. Therefore, we focus on a portion (or unit) of the population; it is from the study of a part that we arrive at an understanding of the whole. When a part (or section, or unit) of a population is studied, it is called 'sample survey research'. The term 'sample' is used for the part of a population that is subjected to study. Identifying such a portion or sample population is not easy. In order to make a survey scientific and representative, one must follow a scientific procedure.

20.5 Sampling and Survey Techniques

Sampling is a method that identifies a representative number from a given universe of population. There are two basic properties of a sample.

i) It should be adequate.

ii) It should be representative of the universe (the 'entire population').

The most crucial point in sampling is to make sure that one's personal values do not influence the selection process. In order to keep out the researcher's bias, various techniques or procedures of selecting a sample have been suggested. For detailed information on sampling see Unit 15 of Block 5 and Unit 21 of Block 6.

Let us at this stage complete Reflection and Action 20.1 exercise.

Reflection and Action 20.1

You can assess the usefulness of a survey in terms of its purpose and therefore it is necessary that you do not confuse the kinds of material you are going to collect. In order to gain more clarity on this point, answer the following questions on a sheet of paper.

Is the survey of "facts" that you count yourself the same as a survey of facts which are reported by respondents and only tallied by the researcher?

Are the respondents' opinions or statements about items not social facts and as such worth researching about?

Is it not necessary to consider whether and how you would locate them in the social context and use to fill out your understanding of the "facts" that you counted yourself?

20.6 Operationlising Survey Research Tools

An important step in any kind of research is the preparation of research tools. Survey research is typically carried out with the help of a questionnaire or interview-schedule. Preparing a questionnaire and interview schedule is the most important step in survey research (see Box 20.3 on the difference between a questionnaire and an interview).

Box 20.3 The Difference between a Questionnaire and an Interview

When the respondents themselves fill in the answers (or responses) to the questions asked, it is called questionnaire. In a schedule, the investigators read out the questions to the respondents and fill in the responses.

There are different ways of approaching a respondent. The simplest way is to approach the potential respondent directly. That is how most surveys are conducted. A research team would invariably go to a village or a locality and try talking to the head of the household (HOH). Questionnaires are also sent by mail; such questionnaires are called 'mailed questionnaires'.

Another method of approaching the respondent is the household drop-off survey. In this the researchers go to the respondents' homes (or businesses) and hand over the questionnaires to the respondents. The respondents can be either requested to mail them back to the researchers or the researchers may personally go to collect them at a later date.

Some researchers have also started using telephones for approaching respondents and filling the interview schedule through conversation on phone. Telephone interviews have become a popular mode of carrying out surveys in countries like the United States of America. There are obvious advantages of such an approach. Telephone interviews can save a lot of time. One can also cover a large area or population through telephone surveys without having to travel. The researchers can also approach the respondents at a later date and ask follow-up questions. Today, e-mail is also being used for mailing questionnaires.

However, in a country like India telephones (or e-mail) are still a privilege of the few. Though some rural areas are now connected by telephone, not every household has a telephone connection. In fact, only a small proportion of the entire population in cities has telephone connections. Thus, only in certain kinds of research where the respondents are largely from middle class backgrounds that one can use the method of telephonic interviews. In such settings not everyone will be willing to respond positively to a request for an interview on telephone. Even when they agree, the interviews generally will have to be short and precise.

Perhaps the best way of carrying out a survey is through personal interviews. Unlike the mail survey or telephone (or e-mail) interviews, in personal interviews, the researchers have opportunities of not only getting

responses from the respondents directly but also get the opportunities of probing some questions which may be beyond the scope of the survey but may help in enriching the data, finding answers to certain critical questions, and sometimes even in identifying further questions.

Once the data have been collected, the researchers have to codify and process the data in a manner that it becomes presentable in tabular form and charts. It should also become accessible for use for statistical treatment that would tell us about the different qualities of the data. Issues relating to processing of data and its presentation in the report will be discussed in detail in the units of Block 8.

20.7 Advantages and Weaknesses of Survey Research

Survey research has the following advantages:

i) Survey research is relatively inexpensive (especially self-administered surveys).

ii) Survey research is useful in describing the characteristics of a large population, demographic structure of a population, and its emerging trends and patterns.

iii) Survey research can be administered from remote locations using mail, e-mail or telephone. Consequently, very large samples are feasible, making the results statistically significant even when analysing multiple variables.

iv) In survey research one can ask many questions about a given topic, which gives considerable flexibility to the analysis.

v) We can choose different ways of administering a survey. From face-to-face interviews to telephones and e-mails one can use any mode of collecting data depending on one's requirements and limitations.

vi) Unlike the qualitative methods, survey research is carried out through standardized questions, which makes measurement more precise by enforcing uniform definitions upon the participants. Standardisation ensures that similar kinds of data are collected from groups and then interpreted comparatively (between-group study),implying more objectivity and higher reliability.

Following are some of the common problems with survey research:

i) A preoccupation with standardisation results in designing questions in very general terms to make them minimally appropriate for all respondents. This could lead to simplification and one may end up missing what may be most appropriate to many respondents.

ii) Survey research is inflexible in the sense that it requires a precise study design. Everything must be worked out in advance, the

tools to be used and the method of administering the tools. In order to make a survey methodologically sound, it should remain unchanged throughout the period of data collection.

iii) In order to make a survey viable and meaningful the researcher has to make sure that a large proportion of selected respondents agree to respond. This, however, may not always be an easy task to achieve. In such situations carrying out a survey becomes difficult.

iv) Surveys also demand a great deal of attention and honesty on the part of respondents, particularly when a questionnaire is being used and the survey is self-administered. Respondents may not always be willing to give such attention to filling the questionnaire. Sometimes, it may be hard for participants to recall certain information or to take a clear position on controversial issues.

v) Another problem with survey research is that it is invariably context-blind. However, in the social world, context and the environment in which questions are being asked and answers given is very important. For example, the responses of a female respondent being asked questions about gender equality in her home, in the presence of her husband and other family members, may be very different from the same questions asked at her work place where she is employed. Survey research can rarely sea lhe the questions of "context".

Reflection and Action 20.2

In his note on Social Surveys in the chapter, Producing Data, Mitchell (1984: 272) wrote,

Obviously, the constraints imposed upon data collection in normal survey work mean that the sort of information collected will be of a different quality from that collected by observation and by extended interviewing. Survey data are likely to provide estimates of the variability and extent of different patterns of association but they naturally do not lend themselves to following out leads or to exploring the cognitive and affective implications to the respondent of the links being studied.

Read the above excerpt from Mitchell's note and in the light of your reading of Unit 20, answer the following questions on a sheet of paper.

i) What are the constraints imposed upon data collection in normal survey work?

ii) Can you find an example of a survey that provides estimates of variability and extent of different patterns of association? For this purpose you may use issues of the Economic and Political Weekly and find an example of survey with the above material.

iii) What does the term 'links' refer to in the above passage? Does it refer to data about networks in surveys?

20.8 Conclusion

Unit 20 aimed at familiarising you with survey method and its relevance in social research. Tracing the history of survey method, it elaborated on

the procedure of carrying out survey and pointed out both its advantages and weaknesses. Unit 20 has prepared adequate background for you to read the details of survey design, instrumentation and execution in the next three units of Block 5.

Further Reading

Moser, C. A. and G. Kalton 1973. *Survey Methods in Social Investigation*. The English Language Book Society: London

de Vaus, D.A. 1986. *Surveys in Social Research*. George Allen and Unwin: London

Young, P. V. 1988. *Scientific Social Surveys and Research*. New Delhi: Prentice Hall.

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Unit 21

Survey Design

Contents

21.1 Introduction
21.2 Preliminary Considerations
21.3 Stages / Phases in Survey Research
21.4 Formulation of Research Question
21.5 Survey Research Designs
21.6 Sampling Design
21.7 Conclusion

Learning Objectives

It is expected that after reading Unit 12 you would be able to

- Work out (a) the purpose of enquiry, (b) the unit on which the survey is to focus and (c) the availability of resources
- Divide the survey research into stages or phases
- Formulate the kinds of questions to be asked during the survey
- Decide the type of research design to employ
- Choose a sampling plan for survey.

21.1 Introduction

Design elements are crucial in understanding the complexity of undertaking a survey. The survey method involves several aspects, which are crucial for its execution in a systematic and scientific manner. Unit 21 provides a description of the basic dimensions of survey in social research. The topics discussed in this unit are: preliminary considerations for undertaking survey research, different stages/phases in conducting a survey, formulation of research questions, types of research design, and details of sampling design.

21.2 Preliminary Considerations

There are three preliminary considerations before any researcher decides to undertake survey as a method of social investigation. The considerations are

i) Purpose of enquiry,
ii) Population on which survey is to focus, and
iii) Resource availability.

Each of these considerations is essential for survey research.

The first prerequisite for undertaking survey research is clear and well-defined objectives, purposes or research questions. The researcher must be clear that the survey method is the best method to study those objectives (purposes or research questions). If there is a clear idea

about the objectives of a research study, it leads to the choice of the appropriate survey as a method of investigation.

The second prerequisite is specifying the population of study. This influences the decisions about sampling and resources. The accessibility of the population is an important element in developing survey design. It judges the duration of study, the different layers of people to be included and the size of the research staff as well as the sample.

The third important prerequisite in designing a survey is to take stock of the resources availability for study. Resources may be in the form of financial costs, manpower requirement and the total time within which the survey has to be completed. Surveys are usually labour intensive, the single largest expenditure being the fieldwork costs which include the interviewing time, travel time, and transport costs, etc. There are additional costs involved in survey research, namely, training and supervision of interviewers, questionnaire construction, pilot testing the questionnaire, printing, posting, coding, computer programming, etc. Thus, the researcher must estimate the availability of resources before starting the survey research.

21.3 Stages / Phases in Survey Research

Survey research calls for a systematic and comprehensive collection of information about the attitudes, beliefs and behaviour of people. In a survey, the researcher follows a deductive approach. He begins with a theoretical or applied research problem and ends with empirical measurement and data analysis. Once a researcher decides that survey is the best and appropriate method to undertake his research, then elaborate steps are taken in order to make the application of the method more scientific and systematic. Further, there is no unanimity among the researchers on the actual number of steps or their ordering. However, here we deal with a few major steps in three phases/stages that cover the preparation, planning and execution of survey research (See Figure 21.1).

Stages / Phases in Survey Research		
Design and Planning Phase	**Data Collection Phase**	**Data Analysis and Reporting**
1. Research Question Formulation 2. Decide Survey Research Design 3. Draw the Sample 4. Data Gathering Techniques 5. Questionnaire Construction 6. Pilot Survey 7. Finalising the Survey Instrument 8. Training of the Investigators	1. Locating the Respondents 2. Accessing the Respondents and Field Settings 3. Supervision and Monitoring of Main Survey	1. Editing 2. Coding 3. Tabulation and Analyses 4. Write-up

Figure 21.1 Major Steps in Three Stages of Survey Research

The first phase covers design and planning for a survey. This is a very elaborate and long phase in which the details of conducting a survey are worked out. It is crucial as it sets the ground for the actual survey.

The important steps in this phase are formulating a research question, deciding the survey research design, working out the sampling procedure, deciding the data gathering techniques, construction of a questionnaire, conducting a pilot survey, modifying the survey instrument, training field investigators/interviewers.

The second phase involves the execution of the main survey for data collection. It includes locating and accessing the respondents and field settings, conducting the survey, monitoring and supervision of the field personnel.

In the third and final phase, the researcher edits the data collected, prepares codebook, and decides the tabulation for data analysis. Finally, the researcher prepares the Write-up/Report of the study.

The listing of steps in a sequential form may give the impression that once a step is covered there is no turning back. However, to the contrary, it is often necessary to alter decisions made at an earlier point in the light of developments during the later stages of research. For instance, the problems encountered during the execution stage may call for modification either of the sampling design or of the type of instrument for collection or of the questionnaire. Further, it is also a mistake to assume that these steps can be followed one at a time without any regard for subsequent steps. In reality, it is often important to keep in mind the other steps while working out the details of one step. For instance, it is necessary to keep in mind the intended data analysis procedures while constructing a questionnaire.

21.4 Formulation of the Research Question

The first step in a survey design is the formulation of a research question. Research question here refers to the major goal problem or objective of the study. In fact, the formulation of a question should precede the selection of survey method for data collection. Though survey has a wide range of applications in the social sciences, it may at times turn out that the other methods of data collection (such as in-depth interviewing or participant observation, etc.) may be more appropriate or suitable to the problem chosen. Thus, it is necessary to think of the appropriateness of the survey method for investigating a particular research problem.

Further, it may be kept in mind that there is a need to formulate a research question at the beginning of research. But, this emphasis does not mean that the initial research question is the final one (see Box 21.1). Often research questions arise unexpectedly in the middle of a conversation with informants. These need not be ignored. Their addition or modification of questions decided earlier is always a useful excercise.

Box 21. Refine Your Research Questions

According to David de Vaus (2002), it is important to know what we are looking for, it is a mistake to let the initial focus blind us to other unanticipated questions which may perhaps be more interesting, important or manageable than the initial one. Research questions can be refined and new issues emerge in the course of survey research.

How does one arrive at a research question? Often, the researcher's curiosity about a particular social phenomenon guides him to choose a particular research question. However, the researcher can formulate his research question in more than one way. First, the starting point could be a theory or a model. The choice of theoretical framework or model will have implications for the kind of questions that are to be formulated and the kind of data that are to be collected. Second, significant social policy implications may guide researchers in formulating their research problem. In other words, the problem chosen should be relevant to the issues of social improvement, social change, or social action. Third, the goal of producing social criticism may lead some researchers to formulate research questions suitable for that objective. Some research questions may meet several or some of these criteria, but it is rare that a research question will meet all of them.

Further, it is important that the survey's general purpose be translated into a specific central problem/aim/objective. It is not enough to say, for example, 'I am interested in getting some answers about inequality'. One should be clear about the kinds of questions one wants to answer. What answers to what questions? Does he want to know the extent of inequality, its distribution, its causes, its effects, or what? What sort of inequality one is interested in - social, political, economic, etc? Over what period? Where?

The process is of narrowing down from a general area of interest to a level that is specific enough for concrete empirical research to be carried out. After specifying the primary objective of the survey, the next step involves identification and itemising of the subsidiary topics that relate to the central purpose. For example, in a study of student attitudes to the quality of undergraduate education in a college, the subsidiary issues may include the quality of teachers, the infrastructural facilities, the admission procedures, the type of courses offered, the content of the courses, the interaction between teachers and students, the facilities for remedial study, the facilities and scope for extra-curricular activities, etc. Once the subsidiary items have been identified, the researcher looks for the specific information required relating to each of those items. For example, with respect to the type of courses required, detailed information is needed on the duration of courses, the status of the courses (credited or non-credited), orientation of the courses (theoretical or practical), etc.

A thorough review of the existing literature (books and journals) on the

topic is helpful while narrowing the specific topic, identifying the subsidiary topics, itemising the subsidiary topics and spelling out the kind of information required on these topics for data collection. A review of literature is helpful because it reveals to us the scope and coverage of research that has already been conducted and helps us in identifying important gaps so that an attempt could be made to fill those gaps through survey research.

There are other ways too that can help a researcher in formulating his research question. One is the exploratory study, which is a tentative and relatively unstructured investigation of a few people who are similar in many respects to those we intend to study as part of the main investigation. For instance, if we intend to work on the quality of undergraduate education in a college, one may have to visit an undergraduate college, interview a few students, and identify the specific research questions for the study. The most important goal of such an exploratory study is that it stimulates the thinking of the researcher and helps him identify specific issues that may be worthy of inclusion in the study. Sometimes, it may help us in understanding the way the concepts are understood differently by different people. For instance, in our earlier example, different students may view differently the notion of 'quality' in undergraduate education. For some, it may mean good teachers/ teaching. For others, it may be good infrastructure or a range of relevant courses of study, etc.

Another aspect of the research question formulation is that of consultation with those who are knowledgeable about the topic and who have done related research. An encounter with these experts can help researchers in anticipating the pitfalls of the proposed research study.

Reflection and Action 21.1

Suppose you have to carry out a survey of waste disposal methods, and you need to formulate research questions. Work out the major goal problem or objective of your study. Write down answers to the following questions on a sheet of paper.

Questions

- In the light of the objective of your study, do you find the survey method a useful and appropriate way of data collection? Provide specific reasons of accepting or rejecting survey method as a method of data collection.
- How have you arrived at each of the research questions? State clearly the choice of your theoretical model.
- Have you looked at the social policy with regard to waste disposal? Elaborate the implications of the policy in terms of it guiding your research problem.
- Is your study going to generate social criticism of an issue of importance for the general public? If yes, you need to work out how your study is going to lead other researchers to formulate further research in the same area.
- Have you transformed the general objective of your study into a specific central problem? It is important that you do this exercise at this stage and state the narrowing down of the problem from general to specific level for concrete research to be carried out.

- ❖ Have you consulted the experts in the area of your research to find out what to expect in your field of inquiry and what are the likely pitfalls to anticipate and to be careful about?

Write your answers to above questions with the help of the relevant text in Section 21.4.

Types of research questions

There is no simple way to define research questions. However, according to David de Vaus, we can delineate different kinds of questions and provide guidelines to help focus research -- descriptive research questions or explanatory research questions or both.

a) Descriptive research questions

It is difficult to focus a descriptive question but five questions can help.

- ❖ What is the time-frame of our interest?
- ❖ What is the geographic location of our interest?
- ❖ patterns for sub-groups?
- ❖ What aspect of the topic are we interested in?
- ❖ How abstract is our interest?

b) Explanatory research question

The first step in formulating explanatory research question is to decide whether we are looking for causes or consequences. We must list possible causes and consequences and then collect relevant data. There are a number of ways of coming up with such a list, namely, previous research, the facts, our own hunches, an interaction with the informants.

Four questions might help formulating explanatory research question.

- ❖ What am I trying to explain?
- ❖ What are the possible causes?
- ❖ Which causes will I explore?
- ❖ What are the possible mechanisms?

Thus, there are varieties of issues that need to be kept in mind while formulating the research question that proposes to undertake survey as a method of data collection. It actually triggers the mind of the researcher as how to operationalise the research.

21.5 Survey Research Designs

After the formulation of the research question, we must decide the type of design to employ. Research designs for surveys are mainly of two types, namely, experimental and descriptive. Experimental designs use environmental arrangements and rely on two or more groups of a participants or observations. When a randomly constituted group of a hundred children is compared three times, the survey design is called experimental. The descriptive design produces information on groups and phenomena that already exist. No new groups are created. Descriptional designs are also called 'observational' or 'explanatory' designs.

Experimental designs

According to Arlene Fink (1995), experimental designs are characterised by comparing two or more groups, at least one of which is experimental. The other is a control (or comparison) group. An experimental groups is given a new or untested, innovative programme, intervention, or treatment. The control is given an alternative (e.g. the traditional programme or no programme at all). A group is any collective unit. Sometimes, the unit is made up of individuals with a common experience, such as men who have participated in a war or those who have had undergone treatment at a hospital or those who have attended a particular school. At other times, the unit is naturally occurring: a classroom, business, hospital, or a prison.

There are different types of controls. Firstly, there are concurrent controls in which participants are not randomly assigned to groups. 'Concurrent' means that each group is assembled at the same time. For example, when 10 of 20 schools are randomly assigned to an experimental group while, at the same time, 10 are assigned to a control group, you have a randomised trial or true experiment. Secondly, there are concurrent controls in which participants are not randomly assigned to groups. These are called non-randomised controlled trials, quasi-experiments, or non-equivalent controls. Thirdly, in 'self-controls', a group is surveyed at two different times. These require pre-measure, post-measures, and are called 'longitudinal' or 'before-after' designs. Fourthly, 'Historical Controls' which make use of data collected for participants in other surveys. Finally, 'combinations' of all consist of concurrent controls with or without pre or post-measures. Of all the experimental designs, longitudinal designs are used quite often in social research.

Longitudinal designs

In a longitudinal[◎] design, data are systematically collected over a period of months or years in such a way that it is possible to observe trends in attitudes or behaviours over the specified period. Consider the following example. If a researcher is interested in studying the changes in the spending behaviour of the white-collar employees, she or he will have to conduct the study at different points of time in a year or periodically. A study of this kind of a problem involves longitudinal (or time-series) designs.

Trend studies and panel studies

There are two types of longitudinal designs: Panel Study and Trend Study. In a panel study, the same respondents (people) are interviewed two or more times. In a trend study, two or more different samples of people (respondents) are drawn at different times from the same population (for examples see Box 21.2). You may have noticed that the television and newspaper media draw samples from time to time to study trends.

Box 21.2 Examples of Panel Study and Trend Study

Suppose we wish to understand the changing support for the leading political parties in the general elections to Parliament, two months before the election. For this study, we draw a sample of adults in the voting age group and 60 percent support, let us say, Political Party I. One month before the election, we re-interview the people who were a part of our sample. Perhaps, 55 percent of them now support Political Party I. This would be a panel study. On the other hand, if we draw a new sample of voters, one month before, and find that 55 percent of the new voters preferred Political Party I, this would be a trend study.

Trend studies provide information on net changes and panel studies provide information on both net and gross changes. Suppose at Time 1, sixty out of every 100 people say they would vote for Political Party A . Between Time 1 and Time 2, 10 of the Political Party A voters might change their opinion and vote for Political Party B and five of the Political Party B might vote for Political Party A. Thus, between Time 1 and Time 2, many people have changed their vote (opinion) and this is a gross change. The net result of these individual changes is that at Time 2, 55 of every 100 people would vote for Political Party A. Thus, if we use a panel design we can count the number of people in our sample who change their opinion between Time 1 and Time 2. If we use a trend design, we can describe the net change in the population, but we cannot count the number of individual change. If the net change is 5 percent (from 60 percent to 55 percent supporting Political Party A), the gross change might be anywhere between 5 percent and 85 percent. Trend studies describe how the distribution of a variable is changing for the population studied. Panel studies describe how individual members of a population are changing (see Box 21.3 for an example of panel design).

Box 21.3 An Example of Panel Design

Lazarsfeld, et.al, find a classic example of panel design in "The People's Choice". (1944). The researchers interviewed a panel of 600 residents of Erie County, Ohio (USA), once a month between May and November of 1940 with respect to how they intended to vote in the presidential election of 1940. Of particular interest to these investigators was the process by which panel members decided to vote the way they eventually did.

There are both advantages and disadvantages to panel designs. Most of the advantages relate to being able to interview the same respondents repeatedly over a period of months or years to see if any changes occur in their thinking and attitudes. If we find shifts in attitudes or reported behaviour, we are in a better position to argue that there has been a real change in the population.

Another advantage of panel design is that they permit much more information to be collected about each respondent than is feasible through

other designs. Panel designs also avoid a heavy dependence on the memory of respondents for information about his time covered by the panel. However, they may still rely on memory for questions about the respondent's past.

The primary disadvantage of panel study is sample mortality; that is, there will be a loss of panel members owing to lack of cooperation, death, or change of residence, etc. Another disadvantage is that it takes a long time to collect data and hence the costs involved may be more. Further, repeated surveys on the same population may cause respondents to become overly sensitized to their role as "selective" respondents.

Descriptive designs

There are two types of descriptive designs, namely, cross-sectional designs and cohort designs.

Cross-sectional designs

In a cross-sectional[@] design, the data is collected at one point in time. This is the most frequently used and most fundamental design in social survey research and is sometimes called 'single-shot survey'. This design is most appropriate for making inferences about the characteristics of the population from which the sample is drawn, and inferences about the relationships between variables at that point in time at which data is collected. The interviewing for such studies is sometimes carried out in less than a week, but more typically requires a few weeks and in some cases a few months. For example, a survey of current people's choices of a political party is a cross-sectional survey.

A researcher might use the data either to describe a sample on one variable or a number of variables or to demonstrate the association between these variables. Consider the following example. A researcher is interested in exploring the attitudes of the parents on the education of their children. He selects a sample of households with school going children in a community (Rural/Urban) and interviews the parents in those select households. After the interviews are completed, the researcher analyses the data and draws conclusions. The research design involved here is a cross-sectional design.

One of the advantages of this design is that a researcher can classify a sample into many quite different sub-groups to explore the separate dimensions of the research topic. A researcher may also use this design in causal analysis. Interestingly, by asking questions about the past it is possible to study certain longitudinal (overtime) social phenomena such as social mobility using a cross-sectional design.

However, the cross-sectional designs have two important limitations: (1) it is difficult to establish the time order of the variables, (2) it is difficult to analyse change over time. To illustrate the first point, suppose in a study, we find that the organisational affiliation is associated with political efficacy, feelings that one can influence the political system. The question

arises as to whether our respondents first joined organisations and later came to feel efficacious because of their experiences in that organisation, or whether they felt efficacious first, which led them to join a particular organisation. Alternatively, whether both causal sequences are operating, either for different people or for the same people. If we gathered data at one point in time, it is difficult to know when differences on each variable developed. Since causes come before effects, it is difficult to know in a cross-sectional design which variable should be taken as independent, causal agent.

A second limitation of the cross-sectional design is that it is difficult to use it for analysing changes over time. Consider the analysis of voting behaviour. At any given point during an election, we can ask respondents how they would vote 'if the elections were held today'. However, voting decisions might change during a campaign and different voters may exhibit different patterns of change. Some know their choice from the beginning and never vary; some switch back and forth between candidates; some are undecided until Election Day. Moreover, people who decide early in a campaign and never waver may have different characteristics and may experience different pressures than people who decide late. In sum, data collected at one time make it difficult to understand social processes that occur over time.

ii) Cohort designs

These forward-looking, or prospective, designs provide data about changes in a specific population. Suppose a survey of the aspirations of athletes participating in the 1996 Olympics is given in 1996, 2000, and 2004. This is a Cohort® design and the Cohort is 1996 Olympics.

Cohort designs can also be retrospective, or look back over time (a historical Cohort) if the events being studied actually occurred before the onset of the survey. For example, suppose a group of persons was diagnosed ten years ago with disease X. If you survey their medical records to the present time, you are using a retrospective Cohort.

Reflection and Action 21.2

In the case of your study of waste disposal methods, you would have formulated research questions and then also refined them. For making clear the type of research questions and the type of research design you have formulated and adopted, answer the following questions on a sheet of paper.

Questions

- Are the questions formulated by you a mix of different types mentioned in the text or of one specific type only?
- What type of survey design have you selected for the survey in your research on waste disposal methods?

Write in detail about the type of design you have selected and also give reasons why you have selected this one and not any of the other designs mentioned in the text.

21.6 Sampling Design

After survey design has been selected, a sampling plan must be chosen. Many details about sampling have been discussed earlier in the units of Block 4 and Block 5, and therefore I am including only those that are new.

Why sampling?

Because the researchers may not include the whole of the population in survey research for reasons of costs and manpower, a part of the population is selected for understanding the characteristics of a population. Sampling, therefore, is a process of systematically selecting cases for inclusion in a research project. A researcher gets a set of cases (or a sample) that is more manageable and cost effective to work with than the pool of all cases. For example, it would be much less costly and time consuming to measure variables on 200 than 20,000 people. The researcher is not just interested in a small subset of cases. Instead, he would like to generalise about the entire pool. If well done, sampling lets the researcher measure variables on the smaller set of cases but generalise results accurately to all cases. For instance, if sampling is well conducted, a researcher can measure variables with, say, 2000 cases, and generalise to 200 million. Survey researchers argue strongly that there would only be 2 - 4 percent variation if all the 200 million cases were used for the study.

The next question is how it is possible to generalize from a handful of cases. It is not based on any magic, but on logical statistical reasoning that has been tested repeatedly with empirical evidence. Moreover, a researcher cannot use just any sample for the purposes of generalization. There are well laid down sampling procedures that require rigorous exercises in order to increase the level of precision in a study.

Basic terms in sampling

i) Sampling element

A sampling element is the unit of analysis (or case) in a population. It can be a person, a group, an organisation, a written document, or symbolic message, or even a social action (a divorce, a fight, etc.) that is being measured.

ii) Population

It is the large pool of elements from which a sample is drawn. Sometimes, the term 'universe' is used interchangeably with 'population'. To define the universe or population, a researcher specifies the unit being sampled, the geographical location, and the temporal boundaries of populations. The term 'target population' refers to the specific pool of cases the researcher wants to study.

iii) Sampling ratio

The ratio of the size of the sample to the size of the target population is the 'sampling ratio'. For example, a college has 2000 students, and a researcher draws a sample of 200 from it. Thus the sampling ratio is 200/2000 = 0.1, or 10 percent.

iv) Sampling frame

A population is an abstract concept. Except for specific small populations, one can never truly freeze a population to measure it. For example, in a city at any given moment, some people are dying, some are traveling outside the city, some have gone on temporary migration to other cities, and some are taking birth. The researcher must decide exactly who to count. Should he count a city resident who happens to be on a holiday or outside the city when the time is fixed for the study? Therefore, the notion of 'population' is abstract and it exists in the mind, but is impossible to pinpoint concretely. Since it is an abstract concept, except for small populations, a researcher needs to estimate the population. Thus, it requires an operational definition.

A researcher operationalises a population by developing a specific list that closely approximates all the elements in the population. This list is a 'sampling frame'. The researcher may choose from many types of sampling frames: telephone directories, driving licences, ration cards, membership of a club, students' registration in a university, etc. A good sampling frame is crucial to good sampling. A mismatch between the sampling frame and the conceptually defined population can be a major source of error. For instance, if you select the telephone directory as a sampling frame, it constitutes only 5-10 percent of the population in a city, say, Delhi. The directory does not list those who do not have a telephone connection. It also does not update quickly the frequent shifts of residences and changes in telephone numbers in a city.

v) Parameter and statistic

Any characteristic of a population is a 'population parameter'. For instance, students from the science stream of children in the age group 6-11 years, etc. It is the true characteristic of the population. Parameters are determined when all elements in a population are measured. The parameter is never known with absolute accuracy for large populations, so researchers must estimate it as based on samples.

Researchers use information from the sample, called a 'statistic', to estimate population parameters.

Sampling errors

If many samples are taken from the same population, it is unlikely that they will all have characteristics identical either with each other or with the population. In brief, there will be what is called 'sampling error'. Sampling error is not necessarily the result of mistakes made in the sampling procedure. Rather, variations occur due to the chance selection of different individuals.

Types of sampling designs

Sampling designs are of two types. The first is called probability-sampling design and the second is non-probability sampling design. In Unit 15 of Block 5 our focus was on how to carry out calculations while here we are discussing each type of sampling design in terms of its essential character

and procedure. All the same you are likely to find some repetition of subject matter which has been retained to reinforce the learning of the same.

i) **Probability sampling design:** Probability sampling provides a statistical basis for stating that a sample is representative of the 'target population'. In probability sample, every element in the population has a known chance of being included in the sample. That means, every member of the target population has a non-zero probability of being included in the study/sample. This allows for estimates of the accuracy of sample findings in approximating what we would find out if we had conducted a census of the total population.

ii) **Non-probability sampling design:** In non-probability sampling designs, we do not know whether an element of the population has an equal chance of being selected. Its probability of selection cannot be determined, as is that with probability sampling where each element has a 50 percent chance of being selected and 50 percent chance of not being included in the sample. The non-probability samples are drawn based on judgment regarding the characteristics of the target population and the needs of survey. With non-probability sampling, some members of the eligible target population have a chance of being chosen and others do not. Thus, the statistical estimates of precision cannot be made with this sample. The non-probability sampling designs are preferred when there is no possibility of probability sampling. Whenever feasible, probability-sampling designs are preferred.

Probability sampling procedures

i) Simple random sampling

In simple random sampling, each member of the population under study has an equal chance of being selected. The method involves selecting at random from a list of the population (a sampling frame) the required number of subjects for the sample. Because of the probability and chance, the sample should contain subjects with characteristics similar to the population as a whole. For example, some old, some young, some tall, some short, some rich, some poor, etc. One essential requisite for this kind of sampling is that a complete list of the population (sampling frame) is needed.

The biggest advantage of simple random sampling is that a researcher can get an unbiased sample without much technical difficulty. For instance, once a member (or element) is selected, he (or it) is not eligible for a second chance and is not returned to the pool. This is what makes a simple random sample relatively unbiased. The typical ways of selecting a simple random sample are mainly through a lottery or through a table of random numbers or now through computer generated random numbers. The lottery method is adopted for smaller populations or sampling frame. For bigger sampling frames, the computer-generated numbers are selected.

It may be kept in mind that simple random sampling may not guarantee a perfect representation of the population. In other words, it may be wise to say that most random samples are close to the population most of the time but may not perfectly match the entire population.

ii) Systematic sampling

This is a modified version of simple random sampling. It involves selecting cases/elements from a population list in a systematic rather than random fashion. Here, the researcher calculates a 'sampling interval' rather than using a list of random numbers. The interval becomes his quasi-random selection method. Thus, in a systematic sample, every 'n'th member has a chance to be included in the sample. For instance, if we are to select 10 cases out of a total of 100, every tenth will have a chance to be selected. In this case, 'n' is any number between 1 and 10. Thus, the starting point in the systematic sampling is chosen at random.

In most cases, a simple random sample and a systematic sample yield virtually equivalent results. One important situation in which systematic sampling cannot be substituted for simple random sampling occurs when the elements in a sample are organised in a cycle or pattern. For example, if sampling is organised of married couples with the male first and female second, such a pattern gives the researcher an unrepresentative sample if a systematic sample is a used. His systematic sample can be non-representative and include only wives or only husbands, depending upon the manner in which cases are organised or patterned.

iii) Stratified sampling

Stratified sampling involves dividing the population into homogenous groups (sub-groups or strata) each group containing subjects with similar characteristics. For example, in the earlier example, Group A might contain only males and Group B only females. After dividing the population into strata or sub-groups, the researcher draws either a simple random sample or systematic sample or both from each of the sub-groups.

How does one decide on sub-groups? The strata or sub-groups are chosen because evidence is available that they are related to the outcome. The justification for the selection of the strata can come from literature and expert opinion.

In stratified sampling, the researcher controls the relative size of each stratum, rather than letting random processes control it. This guarantees representation of different strata within a sample. However, one condition is that the stratified sampling procedures produce samples that are more representative of the population than simple random sample or systematic sample if the stratum information is accurate.

iv) Cluster sampling

The most widely employed probability sample design in survey research is cluster sampling. It addresses two problems - first is the lack of good sampling frame, and second the costs involved in reaching a sampled element or a case. For example, there is no single list of undergraduates

in colleges of a city. Even if one gets an accurate sampling frame, it would cost too much to reach many of the undergraduates as the colleges are spread out geographically in the city. In this case, instead of using a single sampling frame, researchers use a sampling design that involves 'clusters'. In this case, the cluster will be the college.

A cluster is a naturally occurring unit (e.g., a school, which has many classrooms, students, teachers; a city with zones, namely, Each, West, South, Central, North, etc., states, etc.). The clusters are selected randomly and all members of the selected clusters are included in the sample or simple random or systematic or stratified samples are taken out of each cluster. Cluster sampling is used in large surveys. It differs from stratified sampling in that with cluster sampling one starts with a naturally occurring constituency. The researcher selects from among the clusters and either surveys all members of the selection or randomly selects from among them. The resulting sample may not be representatives of areas not covered by the cluster, nor does one cluster necessarily represent another.

v) Stage sampling

Stage sampling, also known as multi-stage sampling, is an extension of cluster sampling. It involves selection of a sample in several stages. That is, taking samples from samples. Suppose we want to survey children's academic performance in schools from a large city. One type of stage sampling might be to select a number of schools; at random, and from each of these schools select a number of classes and select children from within these classes. Another type of stage sampling could be to select one school, in terms of either the geographic region of the school in the community/city or in terms of the type of school (public, private aided, private unaided, etc.) and take their simple random sampling, systematic sampling, or stratified sampling or even mixture of all these.

Non-probability sampling procedures

i) Accidental or convenience sampling

This is also called 'man-on-the-street' survey and it involves choosing the individuals/cases that are readily available on the street, at a market place, at a school, or at a cinema theatre, etc., until the required sample size is obtained. This kind of survey can produce ineffective, highly unrepresentative samples and is not recommended. When a researcher haphazardly selects a sample that is convenient, he can easily get a sample that seriously misrepresents the population. Such samples are cheap and quick, although biases and errors are there in plenty. An example of this kind of survey is the kind of interviews television programmes conduct on the street.

ii) Quota sampling

Quota sampling has often been described as the non-probability equivalent of stratified sampling. In quota sampling, the researcher divides the population into sub-groups or categories such as men and women, reserved

castes and non-reserved castes, arts and commerce, younger and older, etc., and then decides the proportion of individual in each category or sub-group. Thus, the number of respondents is fixed in various categories of the sample.

Quota sampling is an improvement because the researcher can ensure that some population differences are in the sample. However, it is not to argue that it is fully representative. For instance, once quota categories are selected in quota sampling, the actual number of individuals in each category is selected based on the convenience or accidental sampling. Further, the researcher bias might also creep into the selection of actual cases of individuals who are included in the study.

iii) Purposive or judgmental sampling

In purposive sampling, researchers handpick the cases to be included in the sample based on their judgment of their typicality. That means, the judgment of the researcher is used in selecting cases with a specific purpose in mind.

Purposive sampling is appropriate in the following three situations. First, a researcher uses it to select unique cases that are especially informative. Second, a researcher may use purposive sampling to select members of a difficult-to-reach, specialised population. Third, the purposive sampling is preferred when a researcher wants to identify particular types of cases for in-depth investigation.

iv) Dimensional sampling

This is a further refinement of quota sampling. It involves identifying various factors of interest in a population and obtaining at least one respondent of every combination of those factors.

v) Snowball sampling

It is also called a network or chain referral or reputational sampling and it is a method for identifying and sampling (or selecting) the cases in a network. Snowball sampling is based on an analogy to a snowball which begins small but becomes larger as it rolls on wet snow and picks up additional snow. Friendship networks are the most important sources of this kind of sampling. Further, professional associations, chat groups, etc. may also provide bases for such sampling.

Sample size

A question often asked is of the size of the sample. How large should it be? The best answer could be 'it depends'. That means there is no clear-cut answer to this question. However, the literature on survey sampling does give a general advice to prospective survey researchers. For some people, a sample of thirty is the bare minimum if the researcher plans to some form of statistical analysis of the data. However, the size of the sample depends on the plans of the researcher and how accurate the sample has to be for his purposes, and on population characteristics. It may be stated here that a large sample alone does not guarantee a

representative sample. Further, when we increase the sample size, we increase costs. Larger samples mean increased costs. A researcher may keep in mind all these considerations while judging the size of the sample.

In Section 15.3 of Unit 15, you have already learnt how to calculate sample size, when estimating mean and when sampling for proportion.

Reflection and Action 21.3

Discuss in a note of about five hundred words the sampling type and design of the survey you need to carry out in your research on waste disposal methods. While writing the note, take help of the relevant text in the unit.

21.7 Conclusion

This unit has attempted to discuss the initial concerns of the survey researcher. It spelled out the essential prerequisites for undertaking a survey and the steps to be followed in survey research in order to make it more systematic. The unit provided a detailed account of research question formulation, survey research designs, and the sampling designs. Thus, it tried to equip the student with the basic terms and concepts and the process with suitable examples.

Further Reading

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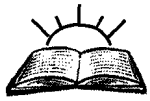
Unit 22

Survey Instrumentation

Contents

22.1 Introduction
22.2 Techniques/Instruments for Data Collection
22.3 Questionnaire Construction
22.4 Issues in Designing a Survey Instrument
22.5 Conclusion

Learning Objectives



It is expected that after reading Unit 12 you would be able to

- ❖ Understand techniques of data collection
- ❖ Practice the art of constructing questions
- ❖ Highlight the issues of reliability and validity in designing survey instruments.

22.1 Introduction

A reliable and valid instrument enhances the quality of data collected. If a reliable instrument is consistent and valid, it is also accurate. In other words, an instrument becomes reliable when each time it is used, the same information flows. A poorly worded survey instrument can seriously affect precision, affecting the entire research process. The researcher must be careful in developing the instrument for survey in order to enhance its quality and purpose.

22.2 Techniques/Instruments for Data Collection

In this section we will discuss i) types of survey instruments, ii) role of the interviewer, iii) stages of an interview and iv) interview bias.

i) Types of survey instruments

There are five principal types of instruments (or techniques) used in survey research. They are: (a) self-administered questionnaires, (b) face-to-face interviews, (c) telephone interviews, (d) internet survey, and (e) structured observation. Each of these instruments has its advantages and disadvantages, which are discussed below.

a) Self-administered questionnaire

A self-administered questionnaire consists of questions that an individual completes by himself or herself. Self-administered questionnaires can be mailed or completed 'on site', say, on a computer or by hand in a classroom, waiting room, or office. The respondents read the questions, then record their answers.

Advantages: Self-administered questionnaires have a clear advantage regarding cost. Since interviews are not part of the data gathering process, the expense of interviews is minimised. This reason alone probably accounts for the fact that so much survey research is conducted by self-administered questionnaires. Another advantage of this instrument is that respondents have time to consider (and ponder over) questions carefully. There is no pressure to react to questions right away as is often the case in an interview. Some respondents feel more comfortable expressing their actual reactions to questions on sensitive topics (sex, politics, and religion) on a self-administered questionnaire than they do in an interview.

In a mailed questionnaire, the researcher can send questionnaires to a wide geographical area and the respondents can complete when it is convenient and can check their personal records, if necessary. Mailed questionnaires offer anonymity and avoid interviewer bias. They are very effective and response rates are high for a target population that is well educated, or has a strong interest in the topic or the survey organization.

Disadvantages: The biggest disadvantage of the questionnaire is low response rate. Respondents may consider questionnaire filling a waste of time. Questionnaires are less successful in those social contexts where oral traditions reign and written traditions are in the back seat. When the attempt is to reach a cross-section of the population, a response rate of 10 percent (and less) may not be uncommon with questionnaires. The researchers may raise response rates by sending reminders, but this adds to the time and cost of data collection. Moreover, reminders, howsoever gentle, may be interpreted as irritants. A partial explanation of this low response rate is that some people have a difficult time filling out questionnaires. For purposes of filling out even simple written questionnaires, the literacy level must be high.

Further, a researcher cannot control the conditions under which a questionnaire is filled. For instance, if the questionnaire is completed during a get-together, there will be many others around the respondent influencing his answers. Some respondents may fill out the questionnaire in the presence of their family members, who may aid in giving answers. Sometimes, someone other than the sampled respondent may complete the questionnaire without the researcher's knowledge. Some respondents may complete the questionnaire weeks apart or answer questions in a different order than that intended by researchers. Incomplete questionnaires can also be a serious problem. Researchers cannot visually observe the respondent's reactions to questions, physical characteristic or the setting in which questionnaires are filled.

The self-administered questionnaire format limits the kind of questions a researcher can ask. Questions requiring visual aids (e.g. look at the picture and tell me what you see), open-ended questions, many contingency questions, and complex questions do poorly in self-administered questionnaires.

b) Face-to-face interview

An interview requires at least two persons: one to ask the questions (the interviewer) and the other, to respond (the interviewee). However, in some cases, group interviews are also possible.

Advantages: Face-to-face interview is generally the best data gathering technique for survey research. This approach enables the researcher to obtain information from a much larger percentage of those sampled than do self-administered questionnaires, particularly those mailed. One reason is that it is more difficult for respondents to refuse cooperation when they are directly confronted and requested to respond to questions than when they receive a questionnaire and are asked to fill it out themselves. The interviewing situation also increases the response rate because many respondents who are unable to fill out a questionnaire by themselves can and will respond to the same questions when asked by an interviewer.

The face-to-face interview enhances not only the response rate, but also the quality of response. When questions are not understood by a respondent, the interviewer can clarify their meaning by the use of 'probing questions'. If a respondent does not answer a question in the proper frame of reference, an interviewer can follow up by asking: "Could you explain what you mean by what you just said?" The use of such probes can eventually bring the respondent around to providing the information sought by a particular question. Besides clarifying doubts, the additional questioning can add depth of information which a respondent provides. A further advantage of face-to-face interviews is that the respondent can ask for clarifications to the questions. It is less likely that false answers will be given by respondents directly to the interviewer.

Disadvantages: The advantages of face-to-face interviews over self-administered questionnaires are conditional: the effectiveness of the confrontation depends on good interviewers who achieve the respect of respondents. A considerable disadvantage of face-to-face interviews is that it is expensive. In fact, the cost can be prohibitive for many survey research situations, particularly, training, supervision, and personnel costs for interviews can be too high. Another disadvantage in a face-to-face interview is the possibility of interviewer bias. The appearance, tone of voice, question wording, and so forth of the interviewer may affect the respondent.

c) Telephone interviews

By telephone interviews is meant those interviews that are conducted on telephone, where the voice of the interviewer is used.

Advantages: Comparatively speaking, the telephone interview is less expensive. It can often provide a representative sample at less than half the cost of face-to-face interviewing. Telephone interview is a popular survey instrument where a large number of respondents have telephones. Further, if concessions and discounts are obtained from telephone

companies, it becomes far more inexpensive as an instrument of data collection.

Disadvantages: People without telephone connections (normally, poor people) and people with unlisted telephone numbers (the well-to-do and those who have recently shifted residence) have to be excluded from telephone surveys. Telephone interviews yield only one-third of the information that could normally be obtained from face-to-face interviews. In the telephone interview, the interviewer cannot use the visual questioning technique (e.g. handing the respondent a lengthy list of alternative response categories) available in self-administered and face-to-face interviews. Moreover, relatively high cost of telephone calls in many parts of the world along with the limited interview length are the main shortcomings of this instrument.

In addition, open-ended questions are difficult to use. Interviewers can only note serious disruptions (e.g. background noise) and respondent's tone of voice (e.g. anger, flippancy or hesitancy).

d) Internet survey

Since the mid-1990s, the internet has become a viable and popular means of administering questionnaires. There are two main ways in which the internet has been used as an instrument for survey: e-mails and via web pages.

i) **E-mail surveys**: E-mail questionnaires are the cheapest of all the techniques of survey research. They come in three different forms. First, as plain text-questions inserted as part of an e-mail. This is the most basic method of e-mail survey in which respondents simply edit the mail message to indicate their response. Second, a formatted questionnaire sent as an e-mail attachment. Third, an interactive questionnaire, which can be sent as an attachment, answered and returned by email.

ii) **Web Page based surveys:** These surveys require that the respondent visit a page (URL). From this page, they will be given a questionnaire. Typically, respondents are recruited for web page questionnaires in one of the following ways:

❖ Pop-up questionnaires: When a person happens to visit the page, a questionnaire will pop up or the respondent will be asked if he wants to go to URL (web address) to answer a questionnaire. This method of sample recruitment depends entirely on people happening to visit the site and then agreeing to answer the questionnaire.

❖ Advertising on other sites: Other sites might advertise a survey. This method can attract people from a wide range of sit and results in a large number of responses but it is difficult to think hat population such a sample represents.

❖ Listserve, news group and chat group advertisin A researcher

may advertise questionnaire or invite participants from people an internet based lists.

❖ E-mail invitations: These may be sent to people whose e-mail addresses are available. The researchers may use both e-mail and web pages based surveys together also. It may be borne in mind that the shortcomings of this instrument are more or less the same as those of the telephonic interviews.

Table 22.1 Types of Surveys and their Features

Features	TYPE OF INSTRUMENT		
	Self-administered Interview	Telephone Interview	Face-to-face Questionnaire
(a) Administrative Issue			
1. Cost	Cheapest	Moderate	Expensive
2. Speed	Slowest	Fastest	Slow to Moderate
3. Length (Number of Questions)	Moderate	Short	Longest
4. Response Rate	Lowest	Moderate	Highest
(b) Research Control			
1. Probes Possible	No	Yes	Yes
2. Specific Response	No	Yes	Yes
3. Question Sequence	No	Yes	Yes
4. Only One Respondent	No	Yes	Yes
5. Visual Observation	No	Yes	Yes
(c) Success with Different Questions			
1. Visual Aids	Limited	None	Yes
2. Open-ended Questions	Limited	Limited	Yes
3. Contingency Questions	Limited	Yes	Yes
4. Complex Questions	Limited	Limited	Yes
5. Sensitive Questions	Same	Same	Same
(d) Sources of Bias			
1. Social Desirability	No	Same	Worse
2. Interviewer Bias	No	Same	Worse
3. Respondent's Reading Bias	Yes	No	No

e) Structured observation

A structured observation collects data visually and is designed to guide the observer in focusing on specific actions or characteristics. For example, two visitors to a school would be participating in a structured observation if both are asked to count and record the number of

computers they see, look for the presence or absence of air conditioning and measure the room's area in square feet. This is a very rarely used instrument/technique in survey research. It is more frequently used in participant observation.

Reflection and Action 22.1

Suppose you have to carry out a survey of waste disposal methods in your area. Which of the above discussed survey instruments would you like to select for your survey? Give specific reasons why you would select one instrument and not any other mentioned in Section 22.2.

ii) Role of the interviewer in social survey

To gather information interviews occur in several settings. Employers interview prospective employees, doctors interview patients, mental health professional interview clients, social workers interview the needy, reporters interview politicians, police interview the witnesses and victims. But, survey research interviewing is a special kind of interviewing. As with most interviewing, its goal is to obtain as far as possible accurate information.

Interview is not just about asking questions. It includes quite a bit of information about the social context in which the interview occurs.

The survey interview is a social relationship. Like other social relationships, it involves social roles, norms, and expectations. The interview is a short term, secondary social interaction between two strangers with the explicit purpose of one person obtaining specific information from the other. The social roles are those of the interviewer and the interviewee or respondent. Information is collected in a structured conversation in which the interviewer asks prearranged questions and the respondent answers. It differs in several ways from ordinary conversations. (See Table 22.2).

Often characteristics of the respondents and the interviewer, such as sex or race or age affect the way either the interviewer or the respondent would reflect attitudes and behaviour that is unrelated to the interview itself.

An important problem for interviewers is that many respondents are unfamiliar with the survey respondents' role and respondents often do not have a clear conception of what is expected of them. As a result, they substitute another role that may affect their responses. Some believe the interview is an intimate conversation or therapy session, others see it as a bureaucratic exercise in completing forms, others view it as a testing session, etc. Even in a well-designed, professional survey, follow-up research found that only half the respondents understand questions exactly as intended by researchers. Respondents reinterpreted questions to make them applicable to their idiosyncratic, personal situations or to make them easy to answer.

Table 22.2 Differences between Structured Interview and Ordinary Conversation

Sl.No	Ordinary Conversation	Sl.No	Structured Survey Interview
1.	Questions and answers from each participant are relatively equally balanced.	1.	Interviewer asks and respondent answers most of the time.
2.	There is an open exchange of feelings and opinions.	2.	Only the respondent reveals feelings and opinions.
3.	Judgments are stated and attempts made to persuade the other to a particular point of view.	3.	Interviewer is non-judgmental and does not try to change respondent's opinions or beliefs.
4.	A person can reveal deep inner feelings to gain sympathy or as a therapeutic release.	4.	Interviewer tries to obtain direct answers to specific questions.
5.	Ritual responses are common (e.g. 'Un huh', shaking head, 'How are you?' 'Fine').	5.	Interviewer avoids making ritual responses that influence a respondent and also seeks genuine answers, not ritual responses.
6.	The participants exchange information and correct the factual errors that they are aware of.	6.	Respondent provides almost all information. Interviewer does not correct a respondent's factual errors.
7.	Topics rise and fall and either person can introduce new topics. The focus can shift directions or digress to less relevant issues.	7.	Interviewer controls the topic, direction, and pace. He keeps the respondent "on task", and irrelevant diversions are contained.
8.	The emotional tone can shift from humour, to joy, to affection, to sadness, to anger, and so on.	8.	Interviewer attempts to maintain a consistently warm but serious and objective tone throughout.
9.	People can evade or ignore questions and give flippant or non-committal answers.	9.	Respondent should not evade questions and should give truthful, thoughtful answers.

Thus, the role of the interviewer is crucial. The interviewer has to obtain cooperation, build rapport, yet remain neutral and objective. He has to encroach upon the respondent's time and privacy for information that may not directly benefit the respondent. The investigators have to try to reduce embarrassment, fear, and suspicion so that respondents feel comfortable while revealing information. Good interviewers monitor the pace and direction of the social interaction as well as the content of answers and the behaviour of respondents. They are non-judgmental and do not reveal their opinions, verbally or non-verbally (e.g., by a look of shock). If a respondent asks for an interviewer's opinion, he politely redirects the respondent and indicates that such questions are largely inappropriate and may be out of context. For instance, if a respondent

asks, "what do you think?", the interviewer may answer politely, "Here, we are interested in what '*you*' think; what I think doesn't matter". Likewise, if a respondent gives a shocking answer (e.g. I was arrested three times for beating my wife), the interviewer does not show shock, surprise, or disdain but treats the answer as a matter of fact. He helps respondents in giving truthful answers.

One may ask, "if survey interviewer must be neutral and objective, why not use a robot or machine?" Machine interviewing has not been very successful because it lacks human warmth, sense of trust, and rapport that an interviewer creates. An interviewer helps define the situation and ensures that respondents have the information sought, understand what is expected, give relevant and serious answers, and are motivated to cooperate. Therefore, the interview is a social interaction in which the behaviour of both interviewer and respondent stems from their attitudes, motives and perceptions.

It may also be borne in mind that the interviewers do more than interview respondents (see Box 22.1).

Box 22.1 Time Allocation of Interviewers' Work schedule

Moser and Kalton (1973) note that face-to-face interviewers spend only about 35 percent of their time interviewing. About 40 percent is spent in locating the correct respondent, 15 percent in traveling, and 10 percent in studying the materials and dealing with administrative aspects and recording details.

iii) Stages of an interview

The interview is conducted in stages, beginning with an introduction and entry. The interviewer gets into the door, shows authorisation, and reassures and secures cooperation from the respondent. He is prepared for reactions such as, "How did you pick me up?" "What good would come out of this?" "I don't know about this?" The interviewer should explain why the specific respondent has been chosen for interviewing and why he cannot be substituted or replaced by anyone else.

The main part of the interview consists of asking questions and recording answers. The interviewer asks the appropriate questions in order, without returning to or skipping questions unless the directions specify this. He goes at a comfortable pace and gives non-directive feedback to maintain interest.

In addition to asking questions, the interviewer records answers. This is easy for close-ended questions, where interviewers just mark the correct box. For open-ended questions, the interviewers' job is more difficult. They listen to the respondent carefully, record in a legible writing what is said verbatim without correcting grammar or slang. Moreover, the interviewers need to avoid summarising or paraphrasing because this causes a loss of information or distorts answers.

The interviewer should know how and when to use probes. A *probe* is a neutral request to make clear an ambiguous answer to complete an incomplete answer, or to obtain a relevant response. Interviewers recognise an irrelevant or inaccurate answer and use probes as needed.

There are many types of probes

- A three-to-five seconds pause;
- Non-verbal communication (e.g. tilt of head, raised eyebrows, eye contact, etc.)
- Repetition of the question or the answer, and then pause
- Ask a neutral question (such as 'Any other reasons'?)

The last stage is the exit, when the interviewer thanks the respondent and leaves. He then goes to a quiet private place to edit the questionnaire and record other details, while they are still fresh in mind. Other details include the date, time, and place of interview; a thumbnail sketch of the respondent's attitude (serious, angry, laughing, etc.). The interviewer records the personal feelings also on the sides. For instance, "the respondent became nervous when questioned about his income".

iv) Interviewer bias

Interviewer bias falls into six categories

i) Errors by respondent - forgetting, embarrassment, misunderstanding, or lying because of the presence of others.

ii) Unintentional errors or interviewer sloppiness - contacting the wrong respondent, misreading a question, omitting questions, reading questions in the wrong order, recording the wrong answer to a question, misunderstanding the respondent.

iii) Intentional subversion by the interviewers -- purposeful attention of answers, omission or rewarding of questions, etc.

iv) Influence due to the interviewer's expectations about a respondent's answers based on the respondent's appearance, living situation, etc.

v) Failure of an interviewer to probe or to probe properly.

vi) Influence on the answers due to interviewer's appearance, tone, attitude, reactions to answers, or comments made outside of the interview schedule.

Further, there are some other factors which might influence the interviewer. For instance, the social setting in which the interview occurs and the interviewer's social background (race, caste, gender, social class, etc.) may also affect the responses.

22.3 Questionnaire Construction

All the data gathering techniques (or instruments) we have discussed

earlier employ a set of questions to which the respondents are asked to reply. This set of questions is referred to as a questionnaire for self-administered questionnaires, mailed questionnaires as well as internet surveys and as an interview schedule for face-to-face interviews and telephonic interviews. This section considers the types of questionnaires and the questions, discussing the guidelines for constructing a good questionnaire or interview schedule.

In this section we will discuss i) types of questionnaires, ii) types of questions, iii) designing a good questionnaire, and iv) things to avoid in questionnaire construction.

i) Types of questionnaires

There are three types of questionnaires, namely, structured, unstructured and semi-structured questionnaires. Structured questionnaires use structured (or closed) questions that provide a respondent with a set of options and it is expected that he picks up one out of many. It does not give much freedom or choice to the respondent. These questionnaires are used when the respondent is a high profile person or professional and who does not want to give longer time for the interview. The unstructured questionnaire includes only the open-ended questions without any options being provided to the respondent. The semi-structured questionnaires include both structured (closed) and unstructured (open) questions and are the most widely used in social research.

ii) Types of questions

a) Structured (closed) and unstructured (open-ended) questions

As mentioned earlier, the structured questions provide the alternative (multiple choice) answers from which the respondent chooses an option. The following is an example.

Example 1: If the general elections were held today, for which party would you vote?

- ❖ Congress
- ❖ B.J.P.
- ❖ CPI(M)
- ❖ Any other (Specify)
- ❖ Don't Know

The alternative answers for a structured question are printed on the questionnaire and either the respondent or the interviewer (depending on the type of instrument) ticks off the appropriate response. Another example of a structured question is the following.

Example 2: How do you feel about the Central Government's initiative to make education a fundamental right?

- ❖ Strongly Approve
- ❖ Approve
- ❖ Ambivalent

- ❖ Disapprove
- ❖ Strongly Disapprove
- ❖ Don't Know

The second question is a better example of a structured (closed) question than the first one because the alternative responses cover the full range of relevant (approving or disapproving) answers. The first question obviously fails by this criterion of completeness because it does not include current political parties, which are potential options. Notice that both questions have a "don't know" category. It is important to have such a category for structured questions because some respondents really may not know how they feel about such issues. However, the researcher generally does not volunteer this as a response alternative because many respondents would use it just to avoid making a decision among the other alternatives.

On the other hand, unstructured (open-ended) questions do not predetermine the possible answers from which the respondent must choose. The following is an example.

Example 3: What do you feel are the major problems facing our nation today?

_____

_____

_____

Instead of providing the possible answers, the questionnaire leaves space for the respondent to answer the question in his own words. In other words, the issue is left open. Such questions have the advantage of allowing for the expression of the depth and complexity of the respondent's feelings and attitudes about a particular topic.

One disadvantage of unstructured questionnaires is that they produce data, which is sometimes difficult to analyse quantitatively because the categorisation of responses must take place after the data has been collected. In some cases, the answers given by respondents vary so much that it becomes impossible to discern a relatively small number of response patterns. This problem does not occur with structured questions because the categories of response on the questionnaire become the categories used for data analysis.

Another important use of structured questions is in the measurement of abstract concepts such as anomie, social class, etc., using an index or scale, which combines several structured questions.

It should be made clear that structured (closed) and unstructured (open-ended) questions have their advantages and disadvantages and that some topic areas are best covered by one or the other question type. For example, the issues for which there is general agreement about the possible alternative replies are best tapped by structured questions. However,

structured questions sometimes inappropriately force respondents to select an answer from irrelevant and predetermined options/choices. This is a major and potential drawback with structured questions.

Unstructured questions, on the other hand, provide respondents the opportunity to 'open up' and answer questions in their own terms. Unfortunately, such responses are sometimes difficult to interpret and analyse.

b) Threatening versus non-threatening questions

Researchers sometimes ask about sensitive issues or ones that respondents may find threatening. The questions about sexual behaviour, drug or alcohol use, criminal or deviant behaviour, mental health, illegal activity, controversial public issues, etc., are considered to be threatening. Researchers who ask such questions must do so with extra care.

Threatening questions are part of a broader issue. Respondents may be ashamed, embarrassed, or afraid to give a truthful answer. Instead, they give what they believe to be the normative or socially desirable answer. This is the *'social desirability bias'*. This social pressure can cause an over-reporting or under-reporting of the true situation. For example, people may under-report an activity that involves deviance, sex, illness, etc. They may over-report being a good citizen (e.g. voting, knowing about issues, etc), being well informed and cultured (e.g. reading, going to cultural events), fulfilling moral responsibilities (e.g. having a job, giving to charity), or having a good family life (e.g. having a happy marriage and good relations with children), etc.

One way of addressing threatening questions is by offering explicit guarantees of confidentiality and by telling respondents that what the survey is seeking are truthful answers, irrespective of what they are. They should ask questions on sensitive topics after respondents have developed trust in an interviewer. They can also wait until after asking a less threatening warm-up material and providing a meaningful context. They can phrase questions to make it easy for a respondent to admit engaging in the threatening behaviour. Another method is to have an introductory statement that states that many people engage in such a behaviour and the respondent certainly is not alone. Yet another way is to use survey instruments that permit anonymity. For instance, it may be better to use a mail or self-administered questionnaire or internet survey or telephonic interview instead of face-to-face interviews.

c) Knowledge questions

Studies on survey suggest that a large majority of the public cannot correctly answer questions that seek to know the facts or knowledge. Researchers may sometimes want to find out whether respondents know about an issue or topics, but knowledge questions can be threatening because respondents do not want to appear ignorant.

d) Skip or contingency questions

Researchers avoid asking questions that are irrelevant for a respondent. Yet some questions apply only to specific respondents. A *'contingency question'* is a two (or more) part question. The answer to the first part of the question determines which of two different questions select respondents for whom a second question is relevant. Sometimes they are called *screen or skip questions.* On the basis of the answer to the first question, the respondent or an interviewer is instructed to go to another or to skip certain questions:

Example 4: Were you a student of the social sciences?

(1) Yes (2) No

(If No, please go to Question 2).

1. (a). If yes, which subject / discipline?

1. (b). How many years have you studied the subject?

iii) Designing a good questionnaire: some guidelines

A good questionnaire forms an integrated whole. The researcher weaves questions together so that they flow smoothly. A good questionnaire is clear, unambiguous and uniformly workable. Its design must minimise potential errors from respondents.

There are two key principles for a good survey questionnaire: Avoid confusion and keep the respondents' perspective in mind. Further, questionnaire construction is an art. It takes skill, practice, patience, and creativity. The principles/guidelines for constructing a good questionnaire are the following:

a) Introduction

Every questionnaire should have an introduction, which gives a description of what the study is all about. The introduction should also provide instructions for responding to the questionnaire and the promise of confidentiality.

b) The order of questions

Most researchers like to begin a questionnaire with one or two questions that will be easy to answer, such as questions about the household size, occupation, village, etc. However, it is important not to make these questions so personal that respondents will be put on the defensive or terminate the interview immediately.

As a rule of thumb, the line of questioning generally is broader at the beginning than later in the questionnaire. For instance, in an apolitically oriented survey, the opening questions might probe in a general way (including some open-ended questions) for the respondent's opinion on the most important issues of the day. Later in the questionnaire, the interviewer might read a list of specific issues and ask the respondent to appraise the relative importance of each one.

The questions should be placed in an order, which facilitates an orderly progression of the interchange between the interviewer and the respondent. One would not, for example, ask a few questions about the most important issues of the day, then skip to questions about political leaders, and then skip back to more questions on the issues of the day, then ask some questions about the respondent's characteristics, then skip back to more questions about political leaders.

Further, the most personal questions are usually saved until late in the questionnaire, so that if the respondent refuses to answer or terminates the interview at that point, most of the information would already have been obtained.

c) Form of the questions

It is important to determine whether structured or unstructured questions are best suited for a given objective. We have stressed the importance of interspersing both types of questions throughout the questionnaire to maintain the interest of the respondent and to complement each other in eliciting both closed and open-ended information. Even more detailed decisions are necessary. Should a structured question take the form a numerical scale (for instance, rating something from 0 to 9 in terms of favorability) or a verbal scale (highly favorable, somewhat favorable, highly unfavorable, somewhat unfavorable)?

d) Clarity

It is crucial to make sure that respondents will be able to understand the meaning of each question. In other words, the researcher must phrase questions in terms the respondents will understand, but he must be careful not to seem patronizing to the respondents. This is often a difficult balance to achieve and is usually best gained through extensive pre-testing of alternative questions.

e) Cross-check questions

It is a good policy to include several different questions on one topic area to see if respondents answer them in the same way. Such questions allow for an appraisal of the validity of the questionnaire and of the accuracy of the respondents' self-reports. A special type of cross check question is the 'random probe'. Each respondent is asked to explain what is meant by his or her responses to a few randomly selected questions. Different respondents are asked to do this for different structured questions. The procedure enables the researcher to eliminate from the analysis phase of research any structured questions which many respondents have misunderstood.

f) Interviewer control

The questionnaire should not only elicit information, it should also facilitate control of the quality of the interviewer's work. For instance, the questionnaire should explicitly instruct the interviewer what to do whenever a specific procedure might be in question. The instruction,

"Give the respondent two or three minutes to think about the question", may be necessary in certain cases, since some interviewers are more impatient than others.

It is important to let the interviewer know through the questionnaire that his work will be fully evaluated after it is completed. Not only should there be a section at the end of the questionnaire for the interviewer's signature and the date of the interview, but this section should be headed with a statement like, "I certify that this is a complete and honest interview, conducted in accordance with the instructions". This phrase implies the sort of commitment which helps motivate interviewers to their best effort.

Another section on validation is sometimes even more persuasive. A portion of each interviewer's work should normally be 'validated' by a member of the research staff who either telephones or writes to a portion of the interviewer's respondents (usually about 15 percent) to make certain the interview was completed, roughly how long it took, whether there were any irritants to the respondents, and whether the respondent confirms the answers to two or three questions. It is important to let the interviewer know that this type of validation will take place; and the questionnaire may end with a section which has space for validator's comments and recommendations.

g) Pre-test

All the interviewing experience and wisdom in the world cannot replace the method of pretest as a means of ensuring that all the above considerations are observed to the fullest possible extent. In a pre-test, the proposed questionnaire is actually administered to a very small sample of respondents (anywhere from 10 to 100, depending on the size of the eventual sample). It is a good idea for the researchers to conduct some of the interviews and for the people who will actually be administering the eventual interviews to conduct others. Thus, the researcher can be mindful of the practical problems inherent in the questionnaire with the help of a pre-test. Sometimes, several pre-tests are necessary, with the questionnaire being revised between the pre-tests.

iv) What to avoid in questionnaire construction

The following aspects should be avoided while preparing a questionnaire.

a) Avoid jargon, slang, and abbreviations: Jargon© and technical terms (such as alienation, anomie, Oedipus complex, etc.) are difficult to understand by laypersons, hence they should be avoided in the questionnaire. Slang is a kind of jargon within a sub-culture. Members of other sub-cultures may not understand it. So slang (such as hotdog, snowbird, etc.) should also be avoided. Also, avoid abbreviations. One should avoid slangs, jargons, and abbreviations unless a specialized population is being surveyed.

b) Avoid ambiguity, confusion, and vagueness: Ambiguity and vagueness plague many researchers engaged in questionnaire construction. A researcher might make implicit assumptions without thinking of the respondents. For example, the question, "What is your income?", could mean weekly, monthly, or annual; family or personal; before taxes or after taxes; for the current year or last year; from salary or from all sources. The confusion causes a lot of inconsistency in how different respondents assign meaning to and answer the question.

Another source of ambiguity is the use of definite words or response categories. For example, an answer to the question, "Do you jog regularly? Yes–– No––," hinges on the meaning of the word *regularly*. Respondents may define the word *regularly* as everyday or every week or month. To reduce confusion, it is better to be specific.

c) Avoid emotional language and prestige bias: Words have implicit connotative as well as explicit denotative meanings. Likewise, titles, or positions in society carry prestige or status. Words with strong emotional connotations and stands on issues linked to people with high social status can colour how respondents hear and answer survey questions. Use neutral language. Avoid words with emotional 'baggage' because respondents may react to the emotionally laden words rather than to the issue. Also avoid prestige bias - associating a statement with a prestigious person or group. Respondents may answer on the basis of their feelings towards the person or group rather than addressing the issue.

d) Avoid double-barreled questions: Make each question about one and only one topic. A double-barreled question consists of two or more questions joined together. It makes a respondent's answer ambiguous. For example, if asked, "Are you provided accommodation and food in the hostel?", the respondent who gets only accommodation or the one who gets only food will have problems in answering. In this case the respondent will also be not certain of the answer.

e) Avoid leading questions: Make respondents feel that all responses are legitimate. Do not let them become aware of an answer that the researcher wants. A leading (or a loaded) question is one that leads the respondent to choose one response over another by its wording. For example, the question, "You don't smoke, do you? leads respondents to state they do not smoke. Further, loaded questions can be stated to get either negative or positive answers.

f) Avoid asking questions that are beyond respondents' capabilities: Asking something that only a few respondents know frustrates and produces poor quality responses among other respondents.

g) Avoid false promises: Do not begin a question with a promise with which respondents may not agree and ask about choices regarding it. Respondents who disagree with the promise will be frustrated and not know how to answer. For example, the question, "The library is open

too many hours. Do you want it to open four hours later or close four hours earlier each day?", leaves those who either support the premise or oppose both alternatives without a meaningful choice.

h) Avoid asking about future intentions: Avoid asking people about what they might do under hypothetical circumstances. Responses are poor predictors of behaviour. Questions such as these are a waste of time as they are abstractions without any indication to the immediate experiences.

i) Avoid double negatives: Double negatives in ordinary language are grammatically incorrect and confusing. For example, "I haven't got no job", logically means that the respondent does have a job.

j) Avoid overlapping or unbalanced response categories: Make response categories or choices mutually exclusive, exhaustive, and balanced. Mutually exclusive means that response categories do not overlap.

Reflection and Action 22.2

To continue with supposing that you have to carry out a survey of waste disposal methods in your area, construct a questionnaire, specifying the types of questions you are going to include in the questionnaire.

22.4 Issues in Designing a Survey Instrument

There are two most important issues which need to be kept in mind while designing a survey instrument. First is the reliability and second the validity of the survey instrument.

i) Reliability

A reliable survey instrument is one that is relatively free from 'measurement error'. Because of this error, the scores obtained from individuals are different from their true scores, which can only be obtained from perfect measures. What causes this error? In some cases, the error results from the measure itself: It may be difficult to understand or poorly administered. For example, a self-administered questionnaire on the value of preventive health care might produce unreliable results if its reading level is too high for the teenaged mothers who are to use it. If the reading level is on the target but the directions are unclear, the measure will be unreliable. Of course, the survey researcher could simplify the language and clarify the directions and still find the measurement error. It is because measurement errors can also come directly from the examinees. For example, if teenaged mothers are asked to complete a questionnaire and they are especially anxious or fatigued, their obtained scores could differ from their true scores.

There are four kinds of reliability, discussed here in terms of survey research: stability, equivalence, homogeneity, and inter- and intra-rater reliability.

a) **Stability**: Stability is sometimes called test-retest reliability. A measure is stable if the correlation between the scores from one time to another is high. Suppose a survey of student's attitudes was administered to the same group of students at school A in April and then again in October. If the survey was reliable and no special program or intervention was introduced, then, on the average, we would expect attitudes to remain the same.

b) **Equivalence**: 'Equivalence' (or 'alternate-form reliability') refers to which two items measure the same concepts at the same level of difficulty. Suppose students were asked a question about their views toward stechnology before participating in a computer course and again two months after completing it. Unless the researcher was certain that the items on the surveys were equal, more favourable views on technology after the second survey could reflect the survey's language level (for example) rather than the improved views.

c) **Homogeneity**: Homogeneity refers to the extent to which all the items or questions assess the same skill, characteristic, or quality. Sometimes, this type of reliability is referred to as internal consistency. For example, suppose a researcher has created a questionnaire to find out about students' satisfaction with a textbook. An analysis of homogeneity will tell us the extent to which all items on the questionnaire focus on satisfaction.

d) **Inter- and Intra-rater reliability**: Inter-rater reliability refers to the extent to which two or more individuals agree. Intra-rater reliability refers to a single individual's consistency of measurement.

ii) Validity

Validity refers to the degree to which a survey instrument assesses what it purports to measure. For example, a survey of student attitude toward scareers in Information Technology would be invalid if the survey only asked about their knowledge of the newest advances in software and hardware technologies. Similarly, an attitude survey will not be considered valid unless you can prove that people who are identified as having a good attitude on the basis of their responses to the survey are different in some observable way from people who are identified as dissatisfied.

Four types of validity are often discussed: content, face, criterion, and construct.

a) **Content**: Content validity refers to the extent to which a measure thoroughly and appropriately assesses the skills or characteristics it is intended to measure. For example, a researcher who is nterested in mental health has to define the concept ("What is mental health?" "How is health distinguished from the disease?") and then write items that adequately contain all aspects of the definition so that the concept is well explained in terms of its measure.

b) Face: Face validity refers to how a measure appears on the surface: Does it seem to ask all the needed questions? Does it use the appropriate language and language level to do so? Face validity, unlike content validity, does not rely on established theory for support.

c) Criterion: Criterion validity compares responses to future performance or to those obtained from other, more well-established surveys. Criterion validity is made up of two sub-categories: Predictive and Concurrent. Predictive validity is the extent to which a measure forecasts future performance. Concurrent validity is demonstrated when two assessments agree or a new measure is compared favourably with one that is already considered valid.

d) Construct: Construct validity is established experimentally to demonstrate that a survey distinguishes between people who do and do not have certain characteristics. For example, a researcher will have to prove in a scientific manner that satisfied respondents behave differently from dissatisfied respondents.

22.5 Conclusion

Unit 22 discussed the details of survey instrumentation. It described the types of data collection techniques/instruments and their advantages and disadvantages, role of the interviewer, interviewer bias, guidelines for constructing a questionnaire and some principles to be kept in mind while preparing the questionnaire, and the issues of reliability and validity of the survey instruments. Each one of these items is important for the success of survey research as this stage is crucial to yield reliable and valid data. Thus the development of survey instrument translates the research question into a questionnaire which then is used to generate data.

Further Reading

Aldridge, Alan. And Levine, Ken. 2201. *Surveying the Social World - Principles and Practice in Survey Research*. Open University Press: Buckingham

Unit 23

Survey Execution and Data Analysis

Contents

23.1 Introduction
23.2 Problems and Issues in Executing Survey Research
23.3 Data Analysis
23.4 Ethical Issues in Survey Research
23.5 Conclusion

Learning Objectives

It is expected that after reading Unit 23 you would be able to

- ❖ Identify the difficulties one faces in executing a survey
- ❖ Carry out the various steps of data analysis, namely, editing, coding, tabulation and data analysis and finally report writing
- ❖ Recognise the kind of ethical and moral issue the researcher faces.

23.1 Introduction

A number of issues spring up throughout the process of executing survey research. We will examine a few of them in order to enhance the quality and reliability of survey. The researcher may confront/encounter many more situations that may inspire him or her to serious thinking about the implementation of the survey plan. The best way to tackle any problem in the field is to keep oneself open to surprises that may come.

23.2 Problems and Issues in Executing Survey Research

There are a number of problems a researcher faces after the preparation and plans for survey have been charted out. The problems may arise out of the poor training of interviewers or investigators, locating and accessing the respondents and field settings, implementing the data collection techniques, and in terms of the costs and resource management. This section presents some of the issues that may confront the researcher in the field.

i) Locating and accessing the field settings

Once the training of the interviewers is over, the actual process of reaching out to respondents and their field settings begins. The first task of the researcher at this stage is to identify the target population and write to the respective organisations and institutions for permission to conduct survey. It is at this stage that one must keep in mind that there are two different kinds of field settings, namely, formal (official) and informal

(unofficial settings). Thus, each of the settings would have some people who may be called the 'gatekeepers', the people with the authority to permit entry into the field settings.

a) Gatekeepers in a formal organisation

Official gatekeepers are the ones who give permission to conduct survey in formal organisations such as schools, government departments, NGOs, etc. (Headmaster in a School or a District Educational Officer at the district level or the Director of an NGO). If we enter an organisation without the permission of the gatekeepers, our survey may face threats of legal action for not taking permission as it is the right of the institution to participate in the study or not. The researcher has to ensure the approval and consent of the gatekeepers before entering formal institutions, such as schools, government departments, NGOs, hospitals, etc.

b) Gatekeepers in an informal setting

It is just not merely in the formal settings, in informal settings also (such as family, community, etc.) gatekeepers are involved. One requires permission to conduct survey research. If the researcher wishes to speak to a child in the home environment, he must speak to the parents first. Usually the parents advise their children to speak to the surveyors. If the researcher intends to speak to women of a house, he is expected to take the permission of the male head of the family. When the researcher wants to speak to a community member, he has to speak to the head of the community (village head, panchayat chairman, caste leaders, etc.). Without the permission of the gatekeepers in informal settings, the members of a family or a community may not cooperate or may even turn down the request for interview. Therefore, the interviewer must be conscious of the importance of gatekeepers in informal settings as well.

c) How do we approach the gatekeepers for permission?

The first thing a researcher must do after identifying the respondents and their settings is that they should inform the gatekeepers about the objectives and purposes behind the survey and apprise them of its overall goal. For instance, the main objective of a survey being undertaken is to assess the impact of the Integrated Education for the Disabled Children. The respondents may be informed that the survey results may be used to improve the quality of implementation and delivery of the scheme and that their cooperation is highly appreciated and valuable. Further, the researcher has to clarify the doubts and apprehensions of both the gatekeepers and respondents. For this, the researcher must be well-versed with the specific objectives of the survey. For instance, the broad objectives of the survey mentioned above are

- To study how far the integrated schools have been successful in integrating the eligible children with special needs.
- To examine the retention strategies adopted by the schools.

- To study whether the facilities for assessment and appropriate placement of the children with disabilities are available in the integrated schools.

There can be many specific objectives of the current survey. So the interviewer should try to understand these objectives and be clear about each of them. This will help him in the later stages of survey execution. It will help to correctly transact and impart the same kind of training to his assistants. The interviewer must also understand the survey's conceptual, cultural, psychological, economic, and political context.

Some of the specific questions the researcher/interviewer must be clear about in the case of our example are

- Who are the children with special needs?
- What are their special needs?
- What is the need for a special programme for children with special needs?
- What is the cultural context of the families, communities and the schools that are going to be a part of the study?
- What will be the psychological condition of the children with disabilities or special needs and their parents?
- What is the economics of running a scheme such as this (IEDC)? What are the possible uses of equipment and their utility and how they are used? Whether the investment on certain items is justified in terms of their utility.
- What is the political context of the schooling of children with special needs? The scheme might be receiving the major focus or less focus in terms of the attention of the implementing agencies, etc. Why has it become so important in recent times? What are the pressure groups asking for the betterment of the scheme? Who are the stakeholders in the programme and what are their positions vis-à-vis the objectives of the scheme?

Further, the researcher must assure the gatekeepers of anonymity and confidentiality of the information provided by them and their organisation. In case one wants to be explicit about the institution / organisation, he should request permission for doing so. Once he is in the field, after gaining entry or access to the setting, a researcher must gain access to the individual respondents. Some important tips to access the respondents are

- Accessing the respondents and building rapport with them:
  Remember the interview situation is one of social interaction. In a social interaction, building rapport is essential if you want your relationship to sustain. Rapport is nothing but building relationships.
- Approach the respondents for permission to include them in the

study. The respondent must be willing to participate in the survey. Everybody in the sample has a right to decide whether he or she would like to be part of the survey. If one is forced to participate in the survey, then the reliability of the information is at stake. There is also the possibility of the respondent providing misleading, incomplete, or incorrect answers.

- ❖ Do not think that it is the privilege of the respondents to give the researchers the interviews and they must cooperate with him. So, the researcher must understand what matters to the respondents before including them in the study (Often surveys are criticized for being driven by the interests of the researcher).
- ❖ Recognise the differences between the respondents: If all the respondents are alike in thought and action, then there is no need for conducting a survey. We can simply take a case and generalize from that case. Variations make the findings of the survey worthwhile and interesting.
- ❖ Avoid unjustified presuppositions and false assumptions about the respondents: Often, we are carried away by our presuppositions and stereotypes about the other individuals. For instance, one may view children with disabilities or special needs differently. This will lead to a bias in the way the questions are asked and even the respondents are accessed. Simply put, the interviewer should not be judgmental in his interaction with the respondents as also with the topic of the survey, the institutions they approach for information, or even the role of the parents, etc.
- ❖ Be a good listener, rather than a good speaker.

Reflection and Action 23.1

Suppose you need to carry out a survey of waste disposal methods of your area, what would be your strategies for reaching out to the respondents? Write a short note on the qualities you would like to see in the interviewers appointed for the survey.

ii) Implementation of data gathering technique

There are a number of problems which spring up after entering the field while executing the main survey. The problems mainly concern the implementation of the data gathering techniques such as self-administered questionnaires and face-to face interviews.

a) Self-administered questionnaires

A major problem with the self-administered mailed questionnaires is how to get them returned. We already know that the respondents face considerable temptation not to fill up the questionnaires mailed to them. The suggestion offered in such cases is that a 50 percent return rate be used as the minimum level of acceptability for survey research based on the self-administered questionnaires. This level can be achieved in some

situations such as those in which a researcher distributes questionnaires personally in a classroom, office premises, etc., but rarely when data collection is based on a mail survey. However, some steps may be suggested to maximize the return rate.

- An introductory letter should accompany the mailed questionnaire. This letter should explain the purpose of study and who is sponsoring the project. A good introductory letter can be an incentive for the respondent to fill out the questionnaire.
- Besides an introductory letter, the inclusion of a stamped, self-addressed envelope for the respondent to return the questionnaire is a necessity if a good return rate is to be achieved.
- In some cases, special incentives such as a pen or a small amount of money are also sent to the potential respondent in order to encourage cooperation. However, this step may raise some ethical questions, besides being costly.
- Finally, what is crucial to a good return rate is an intensive follow-up campaign which attempts to encourage those who have not returned their questionnaires by a certain date.

Sometimes, even if all these steps for increasing the return rate of the self-administered questionnaires are employed, it is unlikely that more than seventy percent of the questionnaires will be returned. The question then remains: How does the thirty percent who do not respond, affect the research outcomes? Can we say that the representativeness of the sample is not jeopardised? The answer is both Yes and No.

For instance, sometimes the poor return rate might affect the research findings as a result of the lack of representativeness. At other times, it may not at all affect the findings of a survey. One way of dealing with this question is to compare the information about those who do not respond with information derived from some other source about the sample. For example, assume that a self-administered questionnaire is mailed to a simple random sample of the students of a college and that sixty percent of the sample return their questionnaires. Information from the survey about the respondent's age, sex, and subject of study can be compared to the information derived from the materials available on the total student body. If there are no startling differences between the survey data and the data from other sources, it could be concluded that the forty percent of the sample which did not return their questionnaire is similar to the sixty percent of those who did return them. In this case the issue of representativeness is favourably resolved. However, it is important to mention that this is not a perfect solution and there can be other ways of resolving it.

b) Face-to-face interviews

Even though the response rate is considerably higher for interviews, there are similar problems involved in face-to-face interviews. Some

strategies for improving the response rate in interviews are the following:

- The refusal of cooperation by potential respondents can be lessened by first training the interviewers in ways to establish rapport with the respondents.
- The temptation of the interviewers to avoid certain respondents should be diminished by emphasising the validation procedure and requiring the interviewers to account for each non-completion. For example, sometimes a researcher doing door-to-door survey may avoid a house that displays a board, "Beware of the Dog".
- Respondents are often not home when the researcher attempts to contact them. It is therefore important to make visits at different times of the day and on different days of the week.

If these strategies are used effectively and the response rate is average or better, there is still the question of how representative the respondents are of the total group one has tried to study. The suggestion given in the case of self-administered questionnaire for comparing the survey information on the respondents with other information about the total group is applied in the case of face-to face-interviews as well.

Further, a major issue crucial for the success of the implementation of the interview process is the selection and training of the interviewing staff. The following aspects should be kept in mind while training the interviewers:

- Train interviewers in how to establish rapport with respondents in order to gain their cooperation. However, rapport does not mean to encourage the pleasing answers.
- The interviewers must be told to remember that the interview situation is one of social interaction. Differences in characteristics such as caste, race, sex, social class, religion) of both the respondent and the interviewer have an impact on the answers elicited.
- The interviewers should become non-judgmental towards the respondents. This quality should make the respondents feel comfortable in expressing their true feelings.
- It makes good sense to hire and train interviewers who are not radically different from the people whom they will be interviewing.
- A manual may be prepared for the interviewers which deals with the general interviewing techniques and the unique requirements of the particular study in question.

After the actual interviewing process begins, interviewers should be asked to return their first few completed interviews to the supervisory personnel for critical evaluation. At this point, some validation interviews should be conducted by telephone or in person to ensure that the interviewers

are not irritating any respondents and that they are really conducting the interviews according as the instructions. Such an assessment is helpful for the purpose of evaluating the questionnaire under actual field conditions. Independent validation of the interviews should continue throughout the time-period of the interviews. See Box 23.1 for guidelines.

Box 23.1 Some guidelines for effective implementation of the data gathering techniques

The researcher has to keep in mind the following guidelines to avoid some problems in the collection of information from the respondents.

- If your questionnaire is in English and your respondents are not comfortable with English, then try to translate the questions in the regional languages while asking the respondents.
- Make the questions meaningful, clear, unambiguous, sensitive, and revealing. The use of language also depends on factors such as age, region, social class, etc.
- Understand the social standing of particular usages in language. For instance, the 'mid-day meal' is' lunch', not 'dinner', the room where the family gathers is the 'sitting room', not the 'living room', a 'magazine' is never called a' book.'
- Sometimes people may think you are being impolite or vulgar or rude or incorrect based on the kind of language you use while interviewing them. This may spoil the entire process of interview itself. So use proper language.
- Tactics for dealing with ambiguous or unclear terms:
  - Avoidence. Use alternatives
  - Another possibility is to gloss the term, i.e. to give a brief explanation to the respondent of what we mean by the word. But one problem with glossing is that we almost impose the meaning or even the answer on the respondent.
  - Clarification. This is a form of glossing, but we explicitly clarify the potential ambiguity
  - Giving Examples. But, it carries the danger of suggesting the answers or may even distract the respondents from thinking about other answers.

23.3 Data Analysis

Once the data have been collected, the task is to reduce the mass of data obtained to a form suitable for analysis. 'Data reduction', as the process is called, generally consists of editing, coding and processing through the computer in the case of large surveys and by hand in the case of small surveys.

a) Editing

Editing the filled in questionnaires is the first step in the preparation of data for processing. It is important to make sure that the questionnaire has been filled up properly. This is a painstaking work but it can be very fruitful. In sum, a good editing job can add substantially to the quality of the collected data.

Editing interview schedules or self-administered questionnaires is intended

to identify and eliminate errors made by the interviewers and the respondents. Moser and Kalton (1973), speak of three tasks in editing:

❖ **Completeness:** A check is made that there is an answer to every question. In most surveys, interviewers are required to record an answer to every question. Missing answers can sometimes be cross-checked from other sections of the survey. At worst, respondents can be contacted again to supply the missing information.

❖ **Accuracy:** As far as possible, a check is made that all questions are answered accurately. Inaccuracies arise out of carelessness on the part of either the respondents or the interviewers. Sometimes a deliberate attempt is made to mislead. A tick in the wrong box, a ring around the wrong code, an error in simple arithmetic can reduce the validity of the data unless they are picked up in the editing process.

❖ **Uniformity:** A check is made that interviewers have interpreted instructions and questions uniformly. Sometimes the failure to give explicit instructions over the interpretation of respondents' replies leads to interviewers recording the same answer in a variety of answer codes instead of one. A check on uniformity can help eradicate this source of error.

b) Coding

The quantitative analysis of survey data requires that answers are converted into numbers. Many variables also require that answers be classified into categories. This process of converting answers to numbers and classifying answers is called Coding©. Thus, the primary task of data reduction is coding, which is primarily assigning a code number to each answer to a question in the questionnaire / interview schedule. There are six main steps in coding and classifying questionnaire data. They are:

❖ Classifying responses

❖ Allocating codes to each variable

❖ Allocating column numbers to each variable

❖ Producing a Codebook

❖ Checking from coding errors

❖ Entering data

Let us discuss in brief each step in coding and classifying data.

i) **Classifying responses:** Coding is more than allocation of numbers to the responses. It also involves the creation of a classification system that imposes a particular order on the data. This in turn affects the way data are analysed. These classification systems are not objective systems but are created by people and reflect the historical and cultural ways in which we make sense of the world around us. David de Vaus (2002) argues that as creators and consumers of research we need to be aware

that classification systems shape what we find.

ii) **Allocating codes to each variable:** Once classification schemes have been developed, our task is to allocate codes to each of the categories in the classification. These classification schemes can be developed either before a questionnaire / interview schedule is administered or after. Much of the work in the classifying responses is undertaken at the questionnaire construction stage where a set of fixed responses is provided to the respondents. Codes are allocated to these responses and these codes are normally visible in printed questionnaires to assist with data entry at a later stage.

Open-ended questions are coded after the data have been collected. Post-coding is done either by using systematic, pre-existing standard coding schemes or developing a coding scheme based on the responses provided by the respondents. For example, standard questions such as occupation, religion, caste, type of family, etc., can have standardized coding schemes. The standardized coding schemes are systematic and are developed by people with considerable expertise after considerable consultation. Further, they are publicly available and reduce code error.

Each variable has at least two categories and any person must belong to one and only one category. The essence of coding is to give a distinctive code to each category of a variable.

iii) **Allocating column numbers to each variable:** To enter codes into a computer they must be put on a 'record'. In the early days of computing a record was a computer card that could contain up to 80 digits. If more than 80 digits were required for all the respondent's answers a second card or record would be used for that case. These days with electronic recording, data can be much longer than eighty digits. The records for each case are then placed in a data file in which the first record represents the first respondent, the next record represents the second respondent and so forth.

iv) **Producing a codebook:** After deciding how to code each response to each variable, it is important to make a systematic record of all the decisions made. This record is called a Codebook and the following information is normally included.

- ❖ The exact wording of the question
- ❖ A name by which a variable is referred to in the programme. In the Codebook list a name is given to each variable.
- ❖ The type of data used for that variable.
- ❖ The first and last column numbers in which the variable is located.
- ❖ The valid codes for each question.
- ❖ The missing data codes for each question.
- ❖ Any special coding instructions used for coding particular questions.

- **Checking for coding errors:** Coding errors can create serious problems during data analysis. The most serious errors figure when data are entered in the wrong columns. But miscodes are a more common problem. These can occur during the data collection phase, during the manual coding of the answers or during the data entry phase. It is probably impossible to eliminate all coding errors but the problem can be reduced by locating and correcting as many errors as possible.
- **Entering data:** In the past, data were always coded manually and entered into the computer by keypunch operators. However, advances in computer technology have radically changed the whole process of data entry.

c) Tabulation and data analysis

By a simple command the computer gives all the tabulations that are anticipated for data analysis. It is the simplified version of the entire data collected, which is given in numerical values of the distribution of responses of the respondents. A researcher labours hard through several stages of survey research to arrive at this stage. The stage of tabulation sums up the outcome of the survey research in a skeleton form. However, it is important that the researcher assumes some knowledge of quantitative data analysis procedures to make sense of the skeleton.

Aldridge and Levine argue that there are three different aspects of a survey analysis. According to them these three dimensions are conceived to be potentially present in the analysis of any survey although they may not be fully or equally exploited. The three dimensions are: descriptive, analytical and contextual. The descriptive dimension tends to dominate in primarily descriptive surveys. The analytic and contextual aspects are more pronounced in analytic surveys, but the art of analysis is to promote the development of all three so that the research potential of a survey is fully realized.

It may also be mentioned here that the data analysis is not just a technical matter. Social scientists have ethical responsibilities to analyse data properly and report it fairly. See Box 23.2 for what you need to be careful about before analysing your data.

Box 23.2 Before Analysis of the Data, Be clear about Four Broad Considerations

- What is the level of measurement of each variable being used in any particular piece of analysis?
- How many variables will any particular piece of analysis require?
- What type of analysis is required? Is descriptive analysis required or analytic or contextual analyses?
- Have the ethical principles of full, fair, appropriate and challenging analysis been applied to the selection of data to be analysed and reported?

d) Report writing

Once the data are available the survey researchers typically write and disseminate reports or present them orally. In any case, the presentation of the results of the survey should be as clear and complete as possible. The following are some questions that are useful for evaluating the quality of a survey research report of findings.

- Could the reader replicate the report on the basis of the information provided? Are all the phases of survey research process explained in adequate detail?
- Are all the potentially relevant data provided or only highly selected excerpts included? Most studies call for much more in the way of preliminary statistical analysis than it would be appropriate to include in the final report. Thus some selectivity is always necessary. But we can question the nature of the selectivity when data for what seem to be superior indicators of the phenomena of interest are not presented and no rationale for their exclusion is provided.
- Are all the data provided supportive of the researcher's hypothesis? When there is no data to contradict the researcher's original hypothesis, we might question the selection procedure used in deciding which results to present. Also related is the tone of the report. Is it one of justifying the hypothesis or of critically evaluating it?
- Are the study's conclusions warranted on the basis of the data that have been presented? It is not uncommon for investigators to inflate the substantive significance of their data to the point that the reader of the text is led to the conclusion that the relationship is very strong when the actual statistical analysis yields a weak or moderate relationship. It is not wise to skip the tables in a report and rely on the author's conclusions about the content of these tables as presented in the text of the report.
- Have the authors demonstrated a desire to put their hypotheses in jeopardy and to really dig up any contradictory evidence that may exist? Or in contrast, do the authors seem to be interested only in presenting results that support their hypothesis?
- Is there any discussion of the author's values and the ways in which they may have had an influence on the outcome of the study?

As more and more research is conducted, an ever-increasing amount of data becomes available to researchers. It is often possible to obtain the data desired simply by reanalysing data reproduced by someone else. This is called secondary analysis of data and it can be used to substantiate or refute the earlier researches on any topic of investigation during the process of report writing.

23.4 Ethical Issues in Survey Research

Like all social research, people can conduct surveys in ethical or unethical ways. A major ethical issue in survey research is the invasion of privacy. Survey researchers can intrude into a respondent's privacy by asking about intimate actions and personal beliefs. People have a right to privacy. Respondents decide when and to whom to reveal personal information. They are likely to give such information when it is asked for in a comfortable context with mutual trust, when they believe answers will remain confidential. Researchers should treat all the respondents with dignity and reduce their anxiety or discomfort. They are also responsible for protecting the confidentiality of data.

The second ethical issue that confronts the survey researcher is the right of respondents to participate voluntarily. Respondents agree to answer questions and can refuse at any time. They give 'informed consent' to participate in research. Researchers depend on the respondents' voluntary cooperation. Therefore, researchers need to ask well-developed questions in a sensitive way, treat respondents with respect, and be very sensitive to confidentiality.

Thirdly, the tendency to mislead the people at large by the survey researchers is also an important ethical consideration. Sometimes, people may also misuse the survey results or use poorly designed or purposely rigged surveys. People may demand answers from surveys that surveys cannot provide or may not understand a survey's limitations. Those who design and prepare surveys may lack sufficient training to conduct a legitimate survey. Sometimes the researchers use the survey format in an attempt to persuade some interviewer to conduct survey, with little or no real interest in learning information from a respondent.

Reflection and Action 23.2

Suppose you have to guide a team carrying out a survey of methods of waste disposal in your area. Explain how you will handle the following questions.

Questions

- What would be your strategy to avoid the policy decisions based on careless or poorly designed surveys may result in waste and human hardship?
- How would you make the survey execution so that legitimate researchers conduct methodologically rigorous survey research?
- How would you make researchers aware of and report the limitations of the survey research?
- How can researchers combat unscrupulous politicians, business people, and others who rig surveys to produce deceptive results?

Write on a sheet of paper your answers to the above questions and add at least four more ethical issues that await a researcher while conducting a survey. Some of them may deal with the sponsorship and funding of the project, researcher's personal preferences and biases, the respondent's deception, etc. Finally answer the question: Who is responsible for dealing with the problem areas and avoiding the ethical issues in order to make the research endeavour successful and objective?

23.5 Conclusion

In this unit, we have attempted to learn the issues and problems that researchers confront while executing the survey. Primarily, it discusses the issue of locating and accessing the field settings and respondents and the problems faced during the administration of data gathering techniques. The unit also discusses the phase of analysis after the completion of data collection and the execution of the main survey. Finally, the ethical issues in the conduct of survey have been discussed.

It may be summed up that survey is a process in which the researcher translates a research question into a questionnaire, which then is used to collect data from respondents. The data thus collected is processed through a rigorous process of editing, coding, and computerisation and tabulation that emerge in the end. This data in turn attempts to analyse the research question formulated at the beginning of the survey research. The entire process requires the utmost attention of the researcher in order to avoid and minimize errors, which may distort the very purpose of research, i.e., search for truth.

Further Reading

Cohen, Louis and Manion, Lawrence. 1994. *Research Methods in Education*. Routledge: London and New York

Neuman, W. Lawrence. 1997. *Social Research Methods*. Allyn and Bacon: Boston

Glossary

(Explanations of glossary words have been prepared with the help of information available on the Internet and in other sources.)

Chi-square: Chi square is a non-parametric test of statistical significance for bivariate tabular analysis (also known as cross breaks). Any appropriately performed test of statistical significance lets you know the degree of confidence you can have in accepting or rejecting a hypothesis. Typically, the hypothesis tested with chi square is whether or not two different samples (of people, texts, whatever) are different enough in some characteristic or aspect of their behaviour that we can generalize from our samples that the populations from which our samples are drawn are also different in the behaviour or characteristic. A non-parametric test, like chi-square, is a rough estimate of confidence; it accepts weaker, less accurate data as input than parametric tests (like t-tests and analysis of variance, for example) and therefore has less status in the pantheon of statistical tests. Nonetheless, its limitations are also its strengths; because Chi Square is more 'forgiving' in the data it will accept, it can be used in a wide variety of research contexts.

Coding: A systematically arranged and comprehensive collection of laws or a systematic collection of regulations and rules of procedure or conduct or a system of signals used to represent letters or numbers in transmitting messages or a system of symbols, letters, or words given certain arbitrary meanings, used for transmitting messages requiring secrecy or brevity.

Cohort: Cohort derives from Latin cohors, "an enclosure, a yard," In Statistics 'cohort' means a sample meant to be representative of a whole population. In informal usage it refers to a variety or diversity.

Concept of probability: Inferential statistics is built on the foundation of probability theory, and has been remarkably successful in guiding opinion about the conclusions to be drawn from data. Yet (paradoxically) the very idea of probability has been plagued by controversy from the beginning of the subject to the present day. One conception of probability is drawn from the idea of symmetrical outcomes. For example, the two possible outcomes of tossing a fair coin seem not to be distinguishable in any way that affects which side will land up or down.

Correlation coefficient: The Pearson Product-Moment Correlation Coefficient (r), or correlation coefficient for short is a measure of the degree of linear relationship between two variables, usually labeled X and Y. While in regression the emphasis is on predicting one variable from the other, in correlation the emphasis is on the degree to which a linear model may describe the relationship between two variables. In regression the interest is directional, one variable is predicted and the other is the predictor; in correlation the interest is non-directional, the relationship is the critical aspect. The computation of the correlation coefficient is most easily accomplished with the aid of a statistical calculator. The value of r was found on a statistical calculator during the estimation of regression parameters in the last chapter. The correlation coefficient may take on any value between plus and minus one.

Cross-sectional: Adjective of cross-section that relates to a section formed by a plane cutting through an object, usually at right angles to an axis or a piece so cut or a graphic representation of such a piece. In physics, it refers to a measure of the probability that an encounter between particles will result in the occurrence of a particular atomic or nuclear reaction. In statistics it refers to a sample meant to be representative of a whole population.

Diachronic and synchronic: Diachronic is a convenient way of referring to something that changes over time. Synchronic refers to 'similar' instances existing at the same time.

Dichotomous: Dividing into two parts; relating to, involving, or proceeeding froma division or the proces of dividing into two, especially mutually exclusive or contradictory groups.

Eclecticism: Eclecticism is an approach to thought that does not hold rigidly to a single paradigm or set of assumptions or conclusions, but instead draws upon multiple theories to gain complementary insights into phenomena, or applies only certain theories in particular cases. This is sometimes inelegant, and eclectics are sometimes criticised for lack of consistency in their thinking, but it is common in many fields of study. For example, most psychologists accept parts of behaviorism, but do not attempt to use the theory to explain all aspects of human behavior. Similarly, a physicist may use Newton's laws for predicting the motion of baseballs, but will switch to the relativity for predicting motion of galaxies or to quantum mechanics for the one of subatomic particles. A statistician may use frequentist techniques on one occasion and Bayesian ones on another. An example of eclecticism in economics is John Dunning's eclectic theory of international production. Eclecticism in psychology is also supported by many in that in reality many factors influence behaviour and psyche, therefore it is inevitable to consider all perspectives in identifying, changing, explaining, and determining behaviour.

Eclecticism was first articulated by a group of ancient philosophers who tried to select from the existing philosophical beliefs those doctrines that seemed most reasonable to them. Out of this collected material they constructed their new system of philosophy. The term comes from the Greek eklektikos: choosing the best. Well known Eclectics in Greek philosophy were the Stoics Panaetius and Posidonius, and the New Academics Carneades and Philo of Larissa. Among the Romans, Cicero was thoroughly eclectic, as he united the Peripatetic, Stoic, and New Academic doctrines. Further eclectics were Varro and Seneca.

Ex-post-facto: Ex post facto is Latin for "from a thing done afterward." Ex post facto is most typically used to refer to a law that applies retroactively, thereby criminalizing conduct that was legal when originally performed.

Gatekeeper: One that is in charge of passage through a gate. The term refers to one who monitors or oversees the actions of others.

Homogeneity: In statistics, homogeneity is the concept related to reliability. While the internal consistency reliability (statistics) indicates the degree a data set approximates an ideal equivalence scale, the homogeneity indicates the degree a data set approximates an ideal.

Hypothesis testing: Setting up and testing hypotheses is an essential part of statistical inference. In order to formulate such a test, usually some theory has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved, for example, claiming that a new drug is better than the current drug for treatment of the same symptoms. In each problem considered, the question of interest is simplified into two competing claims / hypotheses between which we have a choice; the null hypothesis, denoted **H0**, against the alternative hypothesis, denoted **H1**. These two competing claims / hypotheses are not however treated on an equal basis: special consideration is given to the null hypothesis.

Informal Consent: Casual or in an informal manner or an informal agreement to or acceptance of opinion or a course of action.

Information society: An information society is one in which the creation, distribution and manipulation of information is becoming a significant economic and cultural activity. The knowledge economy is its economic counterpart whereby wealth is created through the economic exploitation of knowledge. The information society is a new kind of society. Specific to this kind of society is the central position information technology has for production and economy. Information society is seen as successor to industrial society. Closely related concepts are post-industrial society (cf Daniel Bell), post-fordism, post-modern society, knowledge society, Telematic Society, Information Revolution, and informational society (cf Manuel Castells).

One of the first people to develop the concept of the information society was the economist Fritz Machlup. In 1933 Machlup began studying the effect of patents on research. His work culuminated in the breakthrough study "The production and distribution of knowledge in the United States" in 1962. This book was widely regarded and was eventually translated into Russian and Japanese.

Jargon: The specialised or technical language of a trade, profession, or similar group. Also refers to speech or writing having unusual or pretentious vocabulary, convoluted phrasing, and vague meaning.

Logitudinal: The word comes from the Latin longitudo meaning length. Hence, longitudinal means along the length, running lengthwise, or (by extension) over the course of time.

Mean: The arithmetic mean is what is commonly called the average: When the word "mean" is used without a modifier, it can be assumed that it refers to the arithmetic mean. The mean is the sum of all the scores divided by the number of scores. The formula in summation notation is: ì = ÓX/N where ì is the population mean and N is the number of scores. If the scores are from a sample, then the symbol M refers to the mean and N refers to the sample size. The formula for M is the same as the formula for ì. The mean is a good measure of central tendency for roughly symmetric distributions but can be misleading in skewed distributions since it can be greatly influenced by extreme scores. Therefore, other statistics such as the median may be more informative for distributions such as reaction time or family income that are frequently very skewed.

Measure of variability: The terms variability, spread, and dispersion are synonyms, and refer to how spread out a distribution is. There are four frequently used measures of variability, the range, interquartile range, variance, and standard deviation.

Median: Being in the middle or in intermediate position; relating to or constituting a statistical median

Mode: The most frequent value of a set of data; a value of a random variable for which a function of probabilities defined on it achieves a relative maximum

Parametric: A parameter is a measurement or value on which something else depends. For example, a parametric equaliser is a tone control circuit that allows the frequency of maximum cut or boosts to be set by one control, and the size of the cut or boost by another. These settings, the frequency and level of the peak or trough, are two of the parameters of a frequency response curve, and in a two-control equaliser they completely describe the curve. More elaborate parametric equalisers may allow other parameters to be varied, such as skew. These parameters each describe some aspect of the response curve seen as a whole, over all frequencies. By way of contrast, a graphic equaliser provides individual level controls for various frequency bands, each of which acts only on that particular frequency band.

Peudonym: A pseudonym (Greek: false name) is a fictitious name used by an individual as an alternative to their legal name (whereas an allonym is the name of another actual person assumed by one person in authorship of a work of art; e.g., when ghostwriting a book or play, or in parody, or when using a front such as by screenwriters blacklisted in Hollywood in the 1950s, 1960s, and 1970s). In some cases, the pseudonym has become the legal name of the person using it. Occasionally, a pseudonym is employed to avoid overexposure. Prolific authors for pulp magazines often had two and sometimes three short stories appearing in one issue of a magazine; the editor would create several fictitious author names so that readers would not realise this.

Positivism: In sociology, anthropology, and other social sciences, the term was closely connected to sociological naturalism and can be traced back to the philosophical thinking of Auguste Comte in the 19th century. Describing positivism in the 1966 Henry Myres Lecture, the structural anthropologist Edmund Leach said, "Positivism is the view that serious scientific inquiry should not search for ultimate causes deriving from some

outside source but must confine itself to the study of relations existing between facts which are directly accessible to observation." In some quarters of contemporary sociology, positivism has been replaced by antipositivism.

Psephologists: Those who pursue the scientific study of elections

Qualifiers: Qualifiers is a tool for anyone, professional or student, who must assemble, analyse, evaluate, and organise research data. With Qualifiers you can collect all your data—text, audio, video—in one place and arrange it in categories to suit your purpose. Possible qualitative data include conversations, presentations, recitals, field data, and other situations. You can record audio and play back audio and video with tools such as "transcriber play" and "mark back." Perform post-analyses—"intersection," "union," "not in." Print reports. Project analytic presentations of data and trends from your computer.

Range: The range is the simplest measure of variability to calculate, and one you have probably encountered many times in your life. The range is simply the highest score minus the lowest score.

Rapport: The term refers to the relationship, especially one of mutual trust or emotional affinity. It is a French word, from Old French, from raporter, to bring back: re-, re- + aporter, to bring (from Latin apportâre : ad-, ad- + portâre, to carry.

Regression: A functional relationship between two or more correlated variables that is often empirically determined from data and is used especially to predict values of one variable when given values of the others. A classic statistical problem is to try to determine the relationship between two random variables X and Y. For example, we might consider height and weight of a sample of adults. Linear regression attempts to explain this relationship with a straight line fit to the data.

Rigged: To manipulate dishonestly for personal gain

Sample variance: The statistic s square is a measure on a random sample that is used to estimate the variance of the population from which the sample is drawn. Numerically, it is the sum of the squared deviations around the mean of a random sample divided by the sample size minus one. Regardless of the size of the population, and regardless of the size of the random sample, it can be algebraically shown that if we repeatedly took random samples of the same size from the same population and calculated the variance estimate on each sample, these values would cluster around the exact value of the population variance. In short, the statistic s squared is an unbiased estimate of the variance of the population from which a sample is drawn.

Sampling method: It is incumbent on the researcher to clearly define the target population. There are no strict rules to follow, and the researcher must rely on logic and judgment. The population is defined in keeping with the objectives of the study. Sometimes, the entire population will be sufficiently small, and the researcher can include the entire population in the study. This type of research is called a census study because data is gathered on every member of the population. Usually, the population is too large for the researcher to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn.

Standard deviation: The standard deviation is kind of the "mean of the mean," and often can help you find the story behind the data. To understand this concept, it can help to learn about what statisticians call normal distribution of data. A normal distribution of data means that most of the examples in a set of data are close to the "average," while relatively few examples tend to one extreme or the other.

Tabulation: An orderly columnar display of data, like a chart, table, refers to information set out in tabular form, also refers to the act of putting into tabular form.

Triangulation: In trigonometry and elementary geometry, triangulation is the process of finding a distance to a point by calculating the length of one side of a triangle, given measurements of angles and sides of the triangle formed by that point and two other reference points. Triangulation is used for many purposes, including surveying, navigation, astrometry, binocular vision and gun direction of weapons. Many of these surveying problems involve the solution of large meshes of triangles, with hundreds or even thousands of observations. Complex triangulation problems involving real-world observations with errors require the solution of large systems of simultaneous equations to generate solutions. Famous uses of triangulation have included the retriangulation of Great Britain.

Validity: A deductive argument is sound if and only if it is both valid, and all of its premises are actually true. Otherwise, a deductive argument is unsound. Deductive argument is said to be valid if and only if it takes a form that makes it impossible for the premises to be true and the conclusion nevertheless to be false. Otherwise, a deductive argument is said to be invalid. According to the definition of a deductive argument, the author of a deductive argument always intends that the premises provide the sort of justification for the conclusion whereby if the premises are true, the conclusion is guaranteed to be true as well. Loosely speaking, if the author's process of reasoning is a good one, if the premises actually do provide this sort of justification for the conclusion, then the argument is valid.

Variables: Variables are used in open sentences. For instance, in the formula: $x + 1 = 5$, x is a variable which represents an "unknown" number. In mathematics, variables are usually represented by letters of the Roman alphabet, but are also represented by letters of other alphabets; as well as various other symbols. In computer programming, variables are usually represented by either single letters or alphanumeric strings. Why are variables useful? Variables are useful in mathematics and computer programming because they allow instructions to be specified in a general way. If one were forced to use actual values, then the instructions would only apply in a more narrow, and specific set of situations.

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(Please note that the list of references includes all the sources that the authors of the units have cited in the text. It includes also the books mentioned as Further Reading at the end of each unit of Book 2.)

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