CHAPTER 9

Selecting a Method of Data Collection

In this chapter you will learn about:

- Differences in methods of data collection in quantitative and qualitative research
- Major approaches to information gathering
- Collecting data using primary sources
    - Observation
    - The interview
    - The questionnaire
- Methods of data collection in qualitative research
- Collecting data using secondary sources

Keywords: *closed questions, content analysis, double-barrelled questions, elevation effect, error of central tendency, focus group, halo effect, Hawthorne effect, interview schedule, leading questions, non-participant observation, open-ended questions, oral history, participant observation, primary data, primary sources, questionnaire, secondary data, secondary sources, structured interview, unstructured interview.*

Differences in the methods of data collection in quantitative and qualitative research

Most methods of data collection can be used in both qualitative and quantitative research. The distinction is mainly due to the restrictions imposed on flexibility, structure, sequential order, depth and freedom that a researcher has in their use during the research process. Quantitative methods favour these restrictions whereas qualitative ones advocate against them. The classification of a method into the quantitative or qualitative category depends upon your answers to the following questions:

- What philosophical epistemology is underpinning your approach to research enquiry?
- How was the information collected? Was it through a structured or unstructured/flexible format of

data collection?

- Were the questions or issues discussed during data collection predetermined or developed during data collection?
- How was the information you gathered recorded? Was it in a descriptive, narrative, categorical, quantitative form or on a scale?
- How was the information analysed? Was it a descriptive, categorical or numerical analysis?
- How do you propose to communicate the findings? Do you want to write in a descriptive or analytical manner?

For example, if an observation is recorded in a narrative or descriptive format, it becomes qualitative information, but if it is recorded in categorical form or on a scale, it will be classified as quantitative information. Similarly for data collected through interviews. An unstructured interview, recorded in a descriptive or narrative form, becomes a qualitative method, but in a structured interview, if the information is recorded in response categories or if the categories are developed and quantified out of descriptive responses, it is a quantitative method. Descriptive responses obtained in reply to open-ended questions are all qualitative but if the responses are in numerals they will be considered quantitative. If you develop categories and quantify the categorisation as a part of the analysis of descriptive responses to an open-ended question, it becomes a quantitative analysis. Data generated by focus groups, oral histories, narratives, group interviews is always qualitative in nature.

Major approaches to information gathering

There are two major approaches to gathering information about a situation, person, problem or phenomenon. When you undertake a research study, in most situations, you need to collect the required information; however, sometimes the information required is already available and need only be extracted. Based upon these broad approaches to information gathering, data can be categorised as:

- **primary data;**
- **secondary data**.

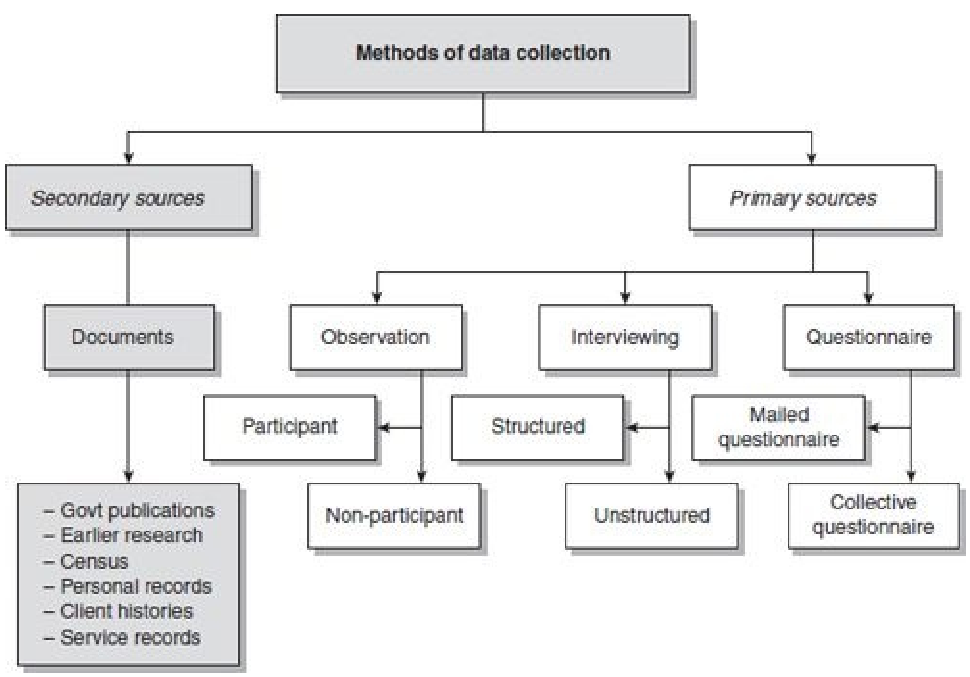

FIGURE 9.1 *Methods of data collection*

Information gathered using the first approach is said to be collected from **primary sources**, whereas the sources used in the second approach are called **secondary sources**. Examples of primary sources include finding out first-hand the attitudes of a community towards health services, ascertaining the health needs of a community, evaluating a social programme, determining the job satisfaction of the employees of an organisation, and ascertaining the quality of service provided by a worker are examples of information collected from primary sources. On the other hand, the use of census data to obtain information on the age–sex structure of a population, the use of hospital records to find out the morbidity and mortality patterns of a community, the use of an organisation's records to ascertain its activities, and the collection of data from sources such as articles, journals, magazines, books and periodicals to obtain historical and other types of information, are all classified as secondary sources. In summary, primary sources provide first-hand information and secondary sources provide second-hand data. Figure 9.1 shows the various methods of data collection.

None of the methods of data collection provides 100 per cent accurate and reliable information. The quality of the data gathered is dependent upon a number of other factors, which we will identify as we discuss each method. Your skill as a researcher lies in your ability to take care of the factors that could affect the quality of your data. One of the main differences between experienced and amateur researchers lies in their understanding of, and ability to control, these factors. It is therefore important for a beginner to be aware of them.

Collecting data using primary sources

Several methods can be used to collect primary data. The choice of a method depends upon the purpose of the study, the resources available and the skills of the researcher. There are times when the method most appropriate to achieve the objectives of a study cannot be used because of constraints such as a lack of resources and/or required skills. In such situations you should be aware of the problems that these limitations impose on the quality of the data.

In selecting a method of data collection, the socioeconomic–demographic characteristics of the study population play an important role: you should know as much as possible about characteristics such as educational level, age structure, socioeconomic status and ethnic background. If possible, it is helpful to know the study population's interest in, and attitude towards, participation in the study. Some populations, for a number of reasons, may not feel either at ease with a particular method of data collection (such as being interviewed) or comfortable with expressing opinions in a questionnaire. Furthermore, people with little education may respond differently to certain methods of data collection compared with people with more education.

Another important determinant of the quality of your data is the way the purpose and relevance of the study are explained to potential respondents. Whatever method of data collection is used, make sure that respondents clearly understand the purpose and relevance of the study. This is particularly important when you use a questionnaire to collect data, because in an interview situation you can answer a respondent's questions but in a questionnaire you will not have this opportunity.

In the following sections each method of data collection is discussed from the point of view of its applicability and suitability to a situation, and the problems and limitations associated with it.

Observation

Observation is one way to collect primary data. Observation is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place. There are many situations in which observation is the most appropriate method of data collection; for example, when you want to learn about the interaction in a group, study the dietary patterns of a population, ascertain the functions performed by a worker, or study the behaviour or personality traits of an individual. It is also appropriate in situations where full and/or accurate information cannot be elicited by questioning, because respondents either are not co-operative or are unaware of the answers because it is difficult for them to detach themselves from the interaction. In summary, when you are more interested in the behaviour than in the perceptions of individuals, or when subjects are so involved in the interaction that they are unable to provide objective information about it, observation is the best approach to collect the required information.

Types of observation

There are two types of observation:

1. participant observation;
2. non-participant observation.

Participant observation is when you, as a researcher, participate in the activities of the group being observed in the same manner as its members, with or without their knowing that they are being observed. For example, you might want to examine the reactions of the general population towards people in wheelchairs. You can study their reactions by sitting in a wheelchair yourself. Or you might want to study the life of prisoners and pretend to be a prisoner in order to do this.

Non-participant observation, on the other hand, is when you, as a researcher, do not get involved in the activities of the group but remain a passive observer, watching and listening to its activities and drawing conclusions from this. For example, you might want to study the functions carried out by nurses in a hospital. As an observer, you could watch, follow and record the activities as they are performed. After making a number of observations, conclusions could be drawn about the functions nurses carry out in the hospital. Any occupational group in any setting can be observed in the same manner.

Problems with using observation as a method of data collection

The use of observation as a method of data collection may suffer from a number of problems, which is not to suggest that all or any of these necessarily prevail in every situation. But as a beginner you should be aware of these potential problems:

- When individuals or groups become aware that they are being observed, they may change their behaviour. Depending upon the situation, this change could be positive or negative – it may increase or decrease, for example, their productivity – and may occur for a number of reasons. When a change in the behaviour of persons or groups is attributed to their being observed it is known as the **Hawthorne effect**. The use of observation in such a situation may introduce distortion: what is observed may not represent their normal behaviour.

- There is always the possibility of observer bias. If an observer is not impartial, s/he can easily introduce bias and there is no easy way to verify the observations and the inferences drawn from them.
- The interpretations drawn from observations may vary from observer to observer.
- There is the possibility of incomplete observation and/or recording, which varies with the method of recording. An observer may watch keenly but at the expense of detailed recording. The opposite problem may occur when the observer takes detailed notes but in doing so misses some of the interaction.

Situations in which observations can be made

Observations can be made under two conditions:

1. natural;
2. controlled.

Observing a group in its natural operation rather than intervening in its activities is classified as observation under natural conditions. Introducing a stimulus to the group for it to react to and observing the reaction is called controlled observation.

Recording observations

There are many ways of recording observations. The selection of a method of recording depends upon the purpose of the observation. The way an observation is recorded also determines whether it is a quantitative or qualitative study. Narrative and descriptive recording is mainly used in qualitative research but if you are doing a quantitative study you would record an observation in categorical form or on a numerical scale. Keep in mind that each method of recording an observation has its advantages and disadvantages:

- **Narrative recording** – In this form of recording the researcher records a description of the interaction in his/her own words. Such a type of recording clearly falls in the domain of qualitative research. Usually, a researcher makes brief notes while observing the interaction and then soon after completing the observation makes detailed notes in narrative form. In addition, some researchers may interpret the interaction and draw conclusions from it. The biggest advantage of narrative recording is that it provides a deeper insight into the interaction. However, a disadvantage is that an observer may be biased in his/her observation and, therefore, the interpretations and conclusions drawn from the observation may also be biased. In addition, interpretations and conclusions drawn are bound to be subjective reflecting the researcher’s perspectives. Also, if a researcher’s attention is on observing, s/he might forget to record an important piece of interaction and, obviously, in the process of recording, part of the interaction may be missed. Hence, there is always the possibility of incomplete recording and/or observation. In addition, when there are different observers the comparability of narrative recording can be a problem.
- **Using scales** – At times some observers may prefer to develop a scale in order to rate various aspects of the interaction or phenomenon. The recording is done on a scale developed by the

observer/researcher. A scale may be one-, two- or three-directional, depending upon the purpose of the observation. For example, in the scale in Figure 9.2 – designed to record the nature of the interaction within a group – there are three directions: positive, negative and neutral.

The main advantage of using scales in recording observation is that you do not need to spend time on taking detailed notes and can thus concentrate on observation. On the other hand, the problems with using a scale are that it does not provide specific and in-depth information about the interaction. In addition, it may suffer from any of the following errors:

  - Unless the observer is extremely confident of his/her ability to assess an interaction, s/he may tend to avoid the extreme positions on the scale, using mostly the central part. The error that this tendency creates is called the **error of central tendency**.
  - Some observers may prefer certain sections of the scale in the same way that some teachers are strict markers and others are not. When observers have a tendency to use a particular part of the scale in recording an interaction, this phenomenon is known as the **elevation effect**.
  - Another type of error that may be introduced is when the way an observer rates an individual on one aspect of the interaction influences the way s/he rates that individual on another aspect of the interaction. Again something similar to this can happen in teaching when a teacher's assessment of the performance of a student in one subject may influence his/her rating of that student's performance in another. This type of effect is known as the **halo effect**.

- **Categorical recording** – Sometimes an observer may decide to record his/her observation using categories. The type and number of categories depend upon the type of interaction and the observer's choice about how to classify the observation. For example, passive/active (two categories); introvert/extrovert (two categories); always/sometimes/never (three categories); strongly agree/agree/uncertain/disagree/strongly disagree (five categories). The use of categories to record an observation may suffer from the same problems as those associated with scales.
- **Recording on electronic devices** – Observation can also be recorded on videotape or other electronic devices and then analysed. The advantage of recording an interaction in this way is that the observer can see it a number of times before interpreting an interaction or drawing any conclusions from it and can also invite other professionals to view the interaction in order to arrive at more objective conclusions. However, one of the disadvantages is that some people may feel uncomfortable or may behave differently before a camera. Therefore the interaction may not be a true reflection of the situation.

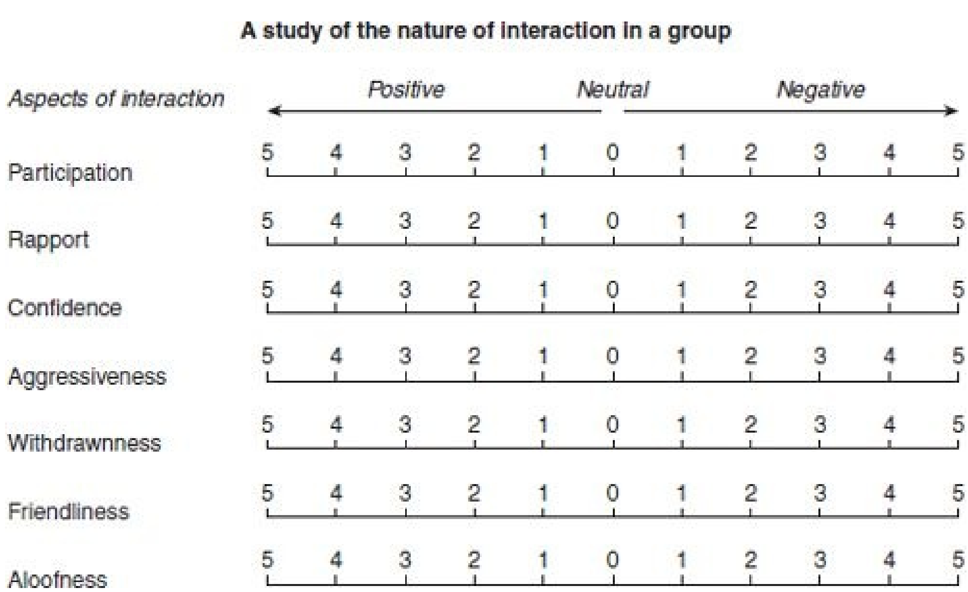

FIGURE 9.2 *A three-directional rating scale*

The choice of a particular method for recording your observation is dependent upon the purpose of the observation, the complexity of the interaction and the type of population being observed. It is important to consider these factors before deciding upon the method for recording your observation.

The interview

Interviewing is a commonly used method of collecting information from people. In many walks of life we collect information through different forms of interaction with others. There are many definitions of interviews. According to Monette et al. (1986: 156), 'an interview involves an interviewer reading questions to respondents and recording their answers'. According to Burns (1997: 329), 'an interview is a verbal interchange, often face to face, though the telephone may be used, in which an interviewer tries to elicit information, beliefs or opinions from another person'. Any person-to-person interaction, either face to face or otherwise, between two or more individuals with a specific purpose in mind is called an interview.

When interviewing a respondent, you, as a researcher, have the freedom to decide the format and content of questions to be asked of your respondents, select the wording of your questions, decide the way you want to ask them and choose the order in which they are to be asked. This process of asking questions can be either very flexible, where you as the interviewer have the freedom to think about and formulate questions as they come to your mind around the issue being investigated, or inflexible, where you have to keep strictly to the questions decided beforehand – including their wording, sequence and the manner in which they are asked. Interviews are classified into different categories according to this degree of flexibility as in Figure 9.3.

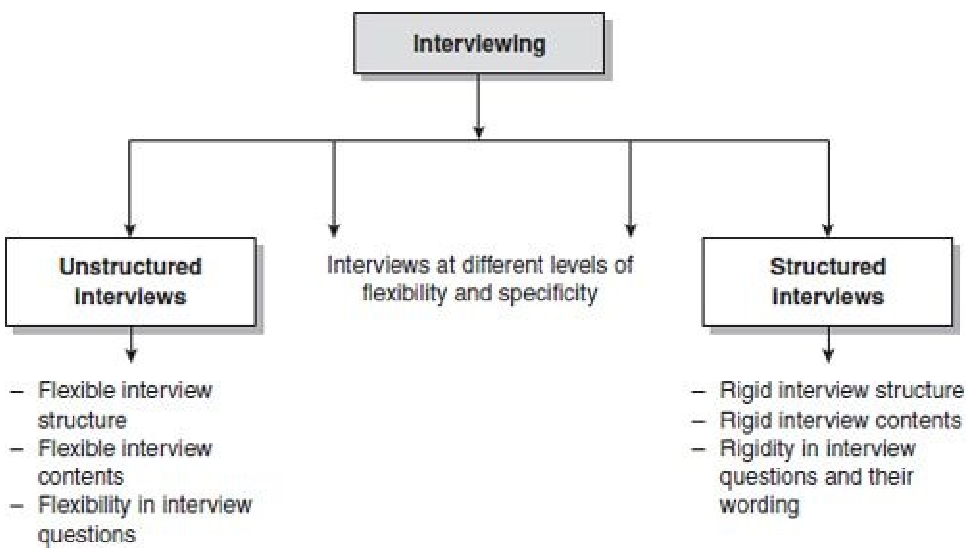

FIGURE 9.3 *Types of interview*

Unstructured Interviews

The strength of *unstructured interviews* is the almost complete freedom they provide in terms of content and structure. You are free to order these in whatever sequence you wish. You also have complete freedom in terms of the wording you use and the way you explain questions to your respondents. You may formulate questions and raise issues on the spur of the moment, depending upon what occurs to you in the context of the discussion.

Unstructured interviews are prevalent in both quantitative and qualitative research. The difference is in how information obtained through them in response to your questions is likely to be used. In quantitative research you develop response categorisations from responses which are then coded and quantified. In qualitative research the responses are used as descriptors, often in verbatim form, and can be integrated with your arguments, flow of writing and sequence of logic. As unstructured interviews are dominantly used in qualitative research, they are described in greater detail under 'Methods of data collection in qualitative research' later in this chapter.

Structured interviews

In a *structured interview* the researcher asks a predetermined set of questions, using the same wording and order of questions as specified in the interview schedule. An **interview schedule** is a written list of questions, open ended or closed, prepared for use by an interviewer in a person-to-person interaction (this may be face to face, by telephone or by other electronic media). Note that an interview schedule is a research tool/instrument for collecting data, whereas interviewing is a method of data collection.

One of the main advantages of the structured interview is that it provides uniform information, which assures the comparability of data. Structured interviewing requires fewer interviewing skills than does unstructured interviewing.

The questionnaire

A **questionnaire** is a written list of questions, the answers to which are recorded by respondents. In a questionnaire respondents read the questions, interpret what is expected and then write down the answers. The only difference between an interview schedule and a questionnaire is that in the former it is the interviewer who asks the questions (and if necessary, explains them) and records the respondent's replies on an interview schedule, and in the latter replies are recorded by the respondents themselves. This distinction is important in accounting for the respective strengths and weaknesses of the two methods.

In the case of a questionnaire, as there is no one to explain the meaning of questions to respondents, it is important that the questions are clear and easy to understand. Also, the layout of a questionnaire should be such that it is easy to read and pleasant to the eye, and the sequence of questions should be easy to follow. A questionnaire should be developed in an interactive style. This means respondents should feel as if someone is talking to them. In a questionnaire, a sensitive question or a question that respondents may feel hesitant about answering should be prefaced by an interactive statement explaining the relevance of the question. It is a good idea to use a different font for these statements to distinguish them from the actual questions. Examples in Figures 9.4 and 9.5 taken from two surveys recently carried out by the author with the help of two students explain some of the above points.

Where to go? A study of occupational mobility among immigrants

The questionnaire opened with the following interactive statement:

> *Personal circumstances, and educational and occupational background, to a great extent determine the occupational mobility of an individual. This is especially true for immigrants. We would therefore like to ask you some questions about you and your family background. Knowledge of these factors is also important for assessing the representativeness of those who participated in the study and to understand the extent, nature and reasons of occupational mobility in relation to your background. We would appreciate your answering these questions as the information you provide will be very useful to us. We would like to emphasise that your responses are extremely valuable to us and we would greatly appreciate your answering all questions. However, if you feel that you do not want to answer a particular question, we will gladly accept your decision. We can assure you that your responses will be completely anonymous and will not be used for any other purpose.*

Before asking questions about family background, the following interactive statement was inserted in the questionnaire:

> *Now, we would like to ask some questions about your family. Your family circumstances can affect your choice of an occupation after immigration. Again, we assure you of the complete anonymity of your responses.*

Before ascertaining respondents' experiences with respect to recognition of their qualifications in Australia, the following interactive statement prepared them to be at ease with the area of inquiry:

> *Recognition of educational and professional qualifications, in addition to other factors, plays a major role in determining an individual's occupational mobility in a new country. In this section we would like to ask your opinion about the process of getting your qualifications recognised. We would also like to know how satisfied or dissatisfied you are with the outcome. If you are dissatisfied, we would like to know your reasons as this information may help decision makers to improve the process. Again, we assure you that your answers will be completely confidential. However, if you still feel that you do not want to answer a particular question, please feel free to omit it.*

FIGURE 9.4 *Example 1*

Ways of administering a questionnaire

A questionnaire can be administered in different ways.

Occupational redeployment – a study of occupational redeployment among state government employees

The following interactive statement was inserted in the questionnaire before questions asking about the socioeconomic–demographic background of respondents:

> *In order to gain an understanding of the situation of employees who have experienced occupational redeployment in state government departments during the last three years, we would like to ask some questions about your background. Your answers will help us to determine the types of occupation where redeployment has occurred and the backgrounds of the employees who have been affected by it. Please do not feel obliged to answer a question if you do not wish to, though we assure you that any information you provide will be treated with strict confidentiality.*

Questions about occupational history were prefaced by the following statement:

> *We would like to ask some questions about your work history. The answers to these questions will enable us to compare the type of work you have been doing since entering the workforce with the job you have been assigned after redeployment. This will help us to establish the nature and extent of change in your job before and after redeployment. Again, there is no obligation to answer a question if you do not want to. However, answers to these questions are extremely important to us. We assure you of the anonymity of the information you provide.*

Before asking questions about the impact of redeployment, the following interactive statement was incorporated into the questionnaire:

> *The following questions ask you to express your opinion about different aspects of your job after and before redeployment. Your answers will help us to gauge the impact of redeployment on different aspects of your work and family situation. We would appreciate your honest opinions. Be assured that your responses will be completely anonymous.*

FIGURE 9.5 *Example 2*

- **The mailed questionnaire** – The most common approach to collecting information is to send the questionnaire to prospective respondents by mail. Obviously this approach presupposes that you have access to their addresses. Usually it is a good idea to send a prepaid, self-addressed envelope with the questionnaire as this might increase the response rate. A mailed questionnaire *must* be accompanied by a covering letter (see below for details). One of the major problems with this method is the low response rate. In the case of an extremely low response rate, the findings have very limited applicability to the population studied.
- **Collective administration** – One of the best ways of administering a questionnaire is to obtain a captive audience such as students in a classroom, people attending a function, participants in a programme or people assembled in one place. This ensures a very high response rate as you will find few people refuse to participate in your study. Also, as you have personal contact with the study population, you can explain the purpose, relevance and importance of the study and can clarify any questions that respondents may have. The author's advice is that if you have a captive audience for your study, don't miss the opportunity – it is the quickest way of collecting data, ensures a very high response rate and saves you money on postage.
- **Administration in a public place** – Sometimes you can administer a questionnaire in a public place such as a shopping centre, health centre, hospital, school or pub. Of course this depends upon the type of study population you are looking for and where it is likely to be found. Usually the purpose of the study is explained to potential respondents as they approach and their participation in the study is requested. Apart from being slightly more time consuming, this method has all the advantages of administering a questionnaire collectively.

Choosing between an interview and a questionnaire

The choice between a questionnaire and an interview schedule is important and should be considered thoroughly as the strengths and weaknesses of the two methods can affect the validity of the findings. The nature of the investigation and the socioeconomic–demographic characteristics of the study population are central in this choice. The selection between an interview schedule and a questionnaire should be based upon the following criteria:

- **The nature of the investigation** – If the study is about issues that respondents may feel reluctant to discuss with an investigator, a questionnaire may be the better choice as it ensures anonymity. This may be the case with studies on drug use, sexuality, indulgence in criminal activities and personal finances. However, there are situations where better information about sensitive issues can be obtained by interviewing respondents. It depends on the type of study population and the skills of the interviewer.
- **The geographical distribution of the study population** – If potential respondents are scattered over a wide geographical area, you have no choice but to use a questionnaire, as interviewing in these circumstances would be extremely expensive.
- **The type of study population** – If the study population is illiterate, very young or very old, or handicapped, there may be no option but to interview respondents.

Advantages of a questionnaire

A questionnaire has several advantages:

- **It is less expensive.** As you do not interview respondents, you save time, and human and financial resources. The use of a questionnaire, therefore, is comparatively convenient and inexpensive. Particularly when it is administered collectively to a study population, it is an extremely inexpensive method of data collection.
- **It offers greater anonymity.** As there is no face-to-face interaction between respondents and interviewer, this method provides greater anonymity. In some situations where sensitive questions are asked it helps to increase the likelihood of obtaining accurate information.

Disadvantages of a questionnaire

Although a questionnaire has several disadvantages, it is important to note that not all data collection using this method has these disadvantages. The prevalence of a disadvantage depends on a number of factors, but you need to be aware of them to understand their possible bearing on the quality of the data. These are:

- **Application is limited.** One main disadvantage is that application is limited to a study population that can read and write. It cannot be used on a population that is illiterate, very young, very old or handicapped.
- **Response rate is low.** Questionnaires are notorious for their low response rates; that is, people fail to return them. If you plan to use a questionnaire, keep in mind that because not everyone will return their questionnaire, your sample size will in effect be reduced. The response rate depends upon a number of factors: the interest of the sample in the topic of the study; the layout and length of the questionnaire; the quality of the letter explaining the purpose and relevance of the study; and the methodology used to deliver the questionnaire. You should consider yourself lucky to obtain a 50 per cent response rate and sometimes it may be as low as 20 per cent. However, as mentioned, the response rate is not a problem when a questionnaire is administered in a collective situation.
- **There is a self-selecting bias.** Not everyone who receives a questionnaire returns it, so there is a self-selecting bias. Those who return their questionnaire may have attitudes, attributes or motivations that are different from those who do not. Hence, if the response rate is very low, the findings may not be representative of the total study population.
- **Opportunity to clarify issues is lacking.** If, for any reason, respondents do not understand some questions, there is almost no opportunity for them to have the meaning clarified unless they get in touch with you – the researcher (which does not happen often). If different respondents interpret questions differently, this will affect the quality of the information provided.
- **Spontaneous responses are not allowed for.** Mailed questionnaires are inappropriate when spontaneous responses are required, as a questionnaire gives respondents time to reflect before answering.
- **The response to a question may be influenced by the response to other questions.** As respondents can read all the questions before answering (which usually happens), the way they answer a particular question may be affected by their knowledge of other questions.
- **It is possible to consult others.** With mailed questionnaires respondents may consult other people

before responding. In situations where an investigator wants to find out only the study population's opinions, this method may be inappropriate, though requesting respondents to express their own opinion may help.

- **A response cannot be supplemented with other information.** An interview can sometimes be supplemented with information from other methods of data collection such as observation. However, a questionnaire lacks this advantage.

Advantages of the interview

- **The interview is more appropriate for complex situations.** It is the most appropriate approach for studying complex and sensitive areas as the interviewer has the opportunity to prepare a respondent before asking sensitive questions and to explain complex ones to respondents in person.
- **It is useful for collecting in-depth information.** In an interview situation it is possible for an investigator to obtain in-depth information by probing. Hence, in situations where in-depth information is required, interviewing is the preferred method of data collection.
- **Information can be supplemented.** An interviewer is able to supplement information obtained from responses with those gained from observation of non-verbal reactions.
- **Questions can be explained.** It is less likely that a question will be misunderstood as the interviewer can either repeat a question or put it in a form that is understood by the respondent.
- **Interviewing has a wider application.** An interview can be used with almost any type of population: children, the handicapped, illiterate or very old.

Disadvantages of the interview

- **Interviewing is time consuming and expensive.** This is especially so when potential respondents are scattered over a wide geographical area. However, if you have a situation such as an office, a hospital or an agency where potential respondents come to obtain a service, interviewing them in that setting may be less expensive and less time consuming.
- **The quality of data depends upon the quality of the interaction.** In an interview the quality of interaction between an interviewer and interviewee is likely to affect the quality of the information obtained. Also, because the interaction in each interview is unique, the quality of the responses obtained from different interviews may vary significantly.
- **The quality of data depends upon the quality of the interviewer.** In an interview situation the quality of the data generated is affected by the experience, skills and commitment of the interviewer.
- **The quality of data may vary when many interviewers are used.** Use of multiple interviewers may magnify the problems identified in the two previous points.
- **The researcher may introduce his/her bias.** Researcher bias in the framing of questions and the interpretation of responses is always possible. If the interviews are conducted by a person or persons, paid or voluntary, other than the researcher, it is also possible that they may exhibit bias in the way they interpret responses, select response categories or choose words to summarise respondents' expressed opinions.