FIFTH EDITION

RESEARCH METHODOLOGY

a step-by-step guide for beginners

RANJIT KUMAR

RESEARCH METHOD OLOGY

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To my daughter, Parul

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GUIDED TOUR

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PREFACE

This book is based upon my experiences in research as a student, practitioner and teacher. The difficulties I faced in understanding research as a student, my discoveries about what was applicable and inapplicable in the field as a research practitioner, my development of the ability to effectively communicate difficult concepts in simple language without sacrificing technicality and accuracy as a teacher, and the feedback of many experts who participated in the evaluations carried out by Pearson Australia on the first edition and Sage UK on the second , third and fourth editions have become the basis of this book. Many aspects of methodology were added on the basis of the feedback of teachers of research methods from a number of countries.

Research methodology is taught as a supporting subject in several ways in many academic disciplines such as health, education, psychology, social work, nursing, public health, library studies and marketing research. The core philosophical base for this book comes from my conviction that, although these disciplines vary in content, their broad approach to a research enquiry is similar. This book, therefore, is addressed to these academic disciplines.

It is true that some disciplines and professionals place greater emphasis on quantitative research, some on qualitative and some on both. My own approach to research is a combination of both. Firstly, it is the objective that should decide whether a study is carried out adopting a qualitative or a quantitative approach. Secondly, in real life most research is a combination of both approaches. Though they differ in the philosophy that underpins their mode of enquiry, to a great extent their broad approach to enquiry is similar. The quantitative research process is reasonably well structured whereas the qualitative one is fairly unstructured, and these are their respective strengths as well as weaknesses. I strongly believe that both are important to portray a complete picture. In addition, there are aspects of quantitative research that are qualitative in nature. It depends upon how a piece of information has been collected and analysed. Therefore I feel very strongly that a good researcher needs to have both types of skill. I follow a qualitative–quantitative–qualitative approach to an enquiry. This book, therefore, has been written to provide information about various methods, procedures and techniques that are used in both the research approaches in a simple step-by-step manner, linked to operational steps. In terms of methods, techniques and procedures, as the mixed/multiple methods approach uses qualitative and/or quantitative approaches, I did not consider it appropriate to describe mixed/multiple methods separately. Thus, although Chapter 1 of this book describes three approaches to a research enquiry in social research, the subsequent chapters describe only the two approaches as the third, mixed methods, is covered under them.

Research as a subject is taught at different levels. The book is designed specifically for students who are newcomers to research and who may have a psychological barrier with regard to the subject. I have,

therefore, not assumed any previous knowledge on the part of the reader; I have omitted detailed discussion of aspects that may be inappropriate for beginners; I have used many flow charts and examples to communicate concepts; and areas covered in the book follow a 'simple to complex' approach in terms of their discussion and coverage. I have also made a deliberate attempt not to make this book too theoretical. This primarily is a 'nuts and bolts' book that aims to develop elementary skills rather than a theoretical and philosophical knowledge base.

The structure of this book, which is based on the model developed during my teaching career, is designed to be practical. The theoretical knowledge that constitutes research methodology is therefore organised around the operational steps that form this research process for quantitative, qualitative and mixed methods research. All the information needed to take a particular step, during the actual research journey, is provided in one place. The information is organised in chapters and each chapter is devoted to a particular aspect of that step (see Figure 2.3). For example, 'formulating a research problem' is the first operational step in the research process. To formulate a 'good' research problem, in my opinion, you need to know how to review the literature, formulate a research problem, deal with variables and their measurement, and construct hypotheses. Hence, under this step, there are four chapters. The information they provide will enable you to formulate a problem that is researchable. These chapters are titled: 'Reviewing the literature', 'Formulating a research problem', 'Identifying variables' and 'Constructing hypotheses'. Similarly, for the operational step, Step III, 'Constructing an instrument for data collection', the chapters titled 'Selecting a method of data collection', 'Collecting data using attitudinal scales' and 'Establishing the validity and reliability of a research instrument' will provide sufficient information for you to develop an instrument for data collection for your study. For every aspect at each step, a smorgasbord of methods, models, techniques and procedures is provided for both quantitative and qualitative studies (and thus also, by extension, for mixed/multiple studies) in order for you to build your knowledge base in research methodology and also to help you to select the most appropriate ones when undertaking your own research.

It is my belief that a sound knowledge of research methodology is essential for undertaking a valid study. To answer your research questions, up to Step V, 'Writing a research proposal', knowledge of research methods is crucial as it enables you to develop a conceptual framework that is sound and has merits for undertaking your research endeavour with confidence. Having completed the preparatory work, the steps that follow are more practical in nature, the quality of which entirely depends upon the soundness of the methodology you proposed in your research proposal. Statistics and computers play a significant role in research, but their application is mainly after the data has been collected. To me, statistics are useful in confirming or contradicting conclusions drawn from simply looking at analysed data, in providing an indication of the magnitude of the relationship between two or more variables under study, in helping to establish causality, and in ascertaining the level of confidence that can be placed in your findings. A computer is used primarily in data analysis, the calculation of statistics, word-processing and the graphic presentation of data. It saves time and makes it easier for you to undertake these activities; however, you need to learn this additional skill. This book does not include statistics or information about computers.

I am grateful to a number of people who have helped me in the writing of this book. First of all, to my students, who have taught me how to teach research methods. The basic structure of this book is an outcome of the

feedback I have received from them over the years. How, and at what stage of the research process, a concept or a procedure should be taught I have learnt from my students. I thank them all for their contribution to this book.

I am extremely grateful to my friend and colleague Dr Norma Watson, whose efforts in editing the first edition were of immense help. The book would not have reached its present stage without her unconditional help.

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Ranjit Kumar

RESEARCH

A WAY OF THINKING

ESSENTIAL TERMS

You should be able to define these by the end of the chapter

- applied research
- descriptive research
- empirical research
- evidence-based practice
- explanatory research
- exploratory research
- paradigm
- qualitative research
- quantitative research
- mixed methods

BONUS TERMS

You will learn more about these by the end of the chapter

- controlled
- correlational
- interpretive paradigm
- positivistic research
- research reliability
- structured enquiries
- unstructured enquiries
- systematic
- validity

LEARNING OBJECTIVES

At the end of this chapter, you will be able to:

- Understand the meaning of research and its benefits and applications for your practice
- Identify situations in which research can be used for practice improvement
- Conceptualise the types of research approaches in the social sciences
- Spot the differences in the applications of quantitative, qualitative and mixed methods approaches
- Name the major paradigms of research in the social sciences

RESEARCH: A WAY OF THINKING

Research: One of the ways of finding answers to your professional and practice questions. It is characterised by the use of tested procedures and methods and an unbiased and objective attitude in the process of exploration.

Research is not only a set of skills, but also a way of thinking. Within this framework of thinking, you usually question what you observe, make an attempt to further explore, understand and explain your observations, and draw conclusions and inferences to enhance your practice skills and their knowledge base. It is looking at your practice or work situation inquisitively, critically and analytically to gain an in-depth knowledge of its rationale, relevance, effectiveness and efficiency. You develop an attitude that encourages you to challenge different aspects of your work situation, to question their purpose, relevance and validity, to find their strengths and weaknesses, and to investigate the possibilities and ways for further improvements and refinements. Research develops this thinking, inquisitive perspective in you. Thinking in this research mode, as a practitioner, you develop the ability to ask yourself questions such as: What am I doing? Why am I doing this? How is it affecting my clients or consumers? How can I improve my work? Such questions naturally come to your mind as a practitioner, and as a researcher you make attempts to find their answers. It is to find answers to such questions that you need to have research skills.

Research develops in you a way of thinking that is logical and rational and that encourages you to critically examine every aspect of your day-to-day situation. It helps you to understand and formulate guiding principles that govern a particular procedure in your practice, and develop and test new ways that contribute to the advancement of your practice and profession. This way of thinking develops in you a very different perspective to your work. Research develops this analytical way of thinking in you, and the knowledge of research methodology provides you with the techniques to find answers to your research questions. This research orientation becomes a cycle of your practice which, in turn, encourages you to further observe, question, explore, test and understand various aspects of your practice.

RESEARCH: AN INTEGRAL PART OF YOUR PROFESSIONAL PRACTICE

Research is an integral part of good professional practice in many professions and has been responsible for greatly influencing the practice procedures and outcomes in these professions. Among many professions such as medicine, public health, psychology and education, research and practice are well integrated, and practice relies very heavily upon what is discovered through research. As a matter of fact, research and practice are two sides of the same coin that should and cannot be separated. It would be appropriate to say that the greater the integration between research and practice in a profession, the greater the advancement in its theoretical and practice knowledge base. As mentioned, research is a habit of questioning what you do, and a systematic way of examining your clinical observations to explain and find answers for what you observe in your practice, with a view to instituting appropriate changes for a more effective professional service. Let us take some disciplines as examples.

Suppose you are working in the field of health. You may be a front-line service provider, supervisor or health administrator/planner. You may be in a hospital or working as an outreach community health worker. You may be a nurse, doctor, occupational therapist, physiotherapist, social worker or other paramedic. In any of these positions, you may ask yourself or be asked some of the following questions:

- How many patients do I see every day?
- What are some of the most common conditions prevalent among my patients?
- What are the causes of these conditions?
- Why do some people have a particular condition whereas others do not?
- What is the average cost of a service to a patient?
- What is the ideal population–worker ratio for this programme?
- What are the health needs of the community?
- What are the benefits of this programme to the community?
- How do I demonstrate the effectiveness of my service?
- Why do some people use the service while others do not?
- What do people think about the service?
- How satisfied are patients with the service?
- How effective is the service?
- How can the service be improved?

You can add many other questions to this list. At times it may be possible to ignore these questions because of the level at which you work; at other times you may make an effort to find answers on your own initiative, or sometimes you may be required to obtain answers for effective administration and planning.

Let us take another discipline: business studies. Assume you work in the area of marketing. Again, you can work at different levels: as a salesperson, sales manager or sales promotion executive. The list of questions that may occur to you is endless. The types of questions and the need to find answers to them will vary with the level at which you work in the organisation. You may just want to find out the monthly fluctuation in the sales of a particular product, or you may be asked to develop a research and development strategic plan to compete for a greater share of the market for your company's products. You may ask yourself or be asked, for example:

- What is the best strategy to promote the sale of a particular product?
- How many salespersons do I need?
- What is the effect of a particular advertising campaign on the sale of this product?
- How satisfied are consumers with this product?
- How much are consumers prepared to spend on this product?
- What do consumers like or dislike about this product?
- What type of packaging do consumers prefer for this product?
- What training do the salespersons need to promote the sale of this product?
- What are the attributes of a good salesperson?

Again, suppose you are a teacher working in a school. In your day-to-day teaching you are likely to encounter many complex questions and issues, the answers to which could directly or indirectly improve your effectiveness as a teacher. Some of these questions could be:

- What do students think about my teaching?
- What do I need to do to become a better teacher?
- Why are some students good at their studies while others are not?
- What effect does the home environment have on the academic achievement of a child?
- What, in students' opinion, are the attributes of a good teacher?
- Do I have the attributes that make a good teacher?
- What is the attitude of students towards homework?
- What determines students' motivation in their studies?
- Is there a relationship between academic achievement and occupational aspirations?

You can go on adding to this list. Answers to these questions will help you to become a better teacher and develop policies and programmes that will improve the system. In an attempt to find valid answers to these questions you need to have research skills.

To take a different example, let us assume that you work as a psychologist, counsellor or social worker. In the course of your work you may ask yourself (or someone else may ask you) the following questions:

- What are my clients' most common presenting problems?
- What are their most common underlying problems?
- What are the reasons for their problems?
- What is the socioeconomic background of my clients?
- Why am I successful in certain cases and not in others?
- What intervention strategies are more effective for the problems of my clients?
- What resources are available in the community to help a client with a particular need?
- What intervention strategies are appropriate for this problem?
- How satisfied are my clients with my services?
- How can I improve the quality of my services?

As a supervisor, administrator or manager of an agency, again different questions relating to the effectiveness and efficiency of a service may come to your mind. For example:

- How many people are coming to my agency?
- What are the socioeconomic-demographic characteristics of my clients?
- How many cases can a worker effectively handle in a day?
- Why do some people use the service while others do not?
- How effective is the service?
- What are the most common needs of clients who come to this agency?
- What are the strengths and weaknesses of the service?
- How satisfied are the clients with the service?
- How can I improve this service for my clients?

Still, at another level of practice, as a professional who feels a responsibility to contribute to the development and enhancement of your profession, you might be interested in finding answers to theoretical questions, such as:

- What is the most effective intervention for a particular problem?
- What causes X, or what are the effects of Y?
- What is the relationship between two phenomena such as unemployment and street crime; stressful living and heart attack; breakdown in marital relationships and personal communication; and immigration and family roles?
- How do I measure the self-esteem of my clients?
- How do I ascertain the validity of my questionnaire?
- What is the pattern of programme adoption in the community?
- What is the best way of finding out community attitudes towards an issue?
- What is the best way to find out the effectiveness of a particular treatment?
- How can I select an unbiased sample?
- What is the best way to find out about the level of marriage satisfaction among my clients?

Let us now consider some questions from the other side of the desk; that is, from the perspectives of consumers of your service. Recent decades have witnessed a tremendous shift in attitudes in the way consumers expect and accept services. It has changed from an obligatory perspective to the right to have a service. The focus is now not only on the service but also on its quality. Therefore in this age of consumerism, you cannot afford to ignore the consumers of a service. Consumers have the right to ask questions about the quality and effectiveness of the service they are receiving and you, as the service provider, have an obligation to answer their questions. Some of the questions that a consumer may ask are:

- How effective is the service that I am receiving?
- Am I getting value for money?
- How well trained are the service providers?

Most professions that are in the human service industry would lend themselves to the questions raised above and you as a service provider should be well prepared to answer them. Irrespective of your field of practice and the level at which you work, in your day-to-day practice, you will encounter many of these questions and to improve your practice you must find their answers. Research is one of the ways to help you do so objectively.

RESEARCH: A WAY TO GATHER EVIDENCE FOR YOUR PRACTICE

In recent decades evidence-based practice (EBP) has gained recognition as a requirement for a good professional practice. In professions such as medicine it has become a service delivery norm, a requirement and an indicator

Evidence-based practice: A service delivery system that is based upon research evidence as to its effectiveness; a service provider's clinical judgement as to its suitability and appropriateness for a client; and a client's preference as to its acceptance.

of practice accountability. Though its origin is credited to medical practice, EBP has become an important part of many other professions such as nursing, allied health services, mental health, community health, social work, psychology and teaching. It is now being promoted as an acceptable and scientific method for policy formulation and practice assessment.

EVIDENCE-BASED PRACTICE

CHECKPOINT
Evidence-based practice

Evidence-based practice is the delivery of services based upon research evidence about their effectiveness; the service provider's clinical judgement as to the suitability and appropriateness of the service for a client; and the client's own preference as to the acceptance of the service. The concept of EBP encourages professionals and other decision-makers to use evidence regarding the effectiveness of an intervention in conjunction with the characteristics and circumstances of a client and their own professional judgement to determine the appropriateness of an intervention when providing a service to a client. In this age of accountability, you as a professional must be accountable to your clients as well as your profession. It is as a part of this accountability that you need to demonstrate the effectiveness of the service(s) you provide.

Research is one of the ways of collecting accurate, sound and reliable information about the effectiveness of your interventions, thereby providing you with evidence of its effectiveness. As service providers and professionals, we use techniques and procedures developed by research methodologists to consolidate, improve, develop, refine and advance clinical aspects of our practice to serve our clients better.

APPLICATIONS OF RESEARCH IN PRACTICE DEVELOPMENT AND POLICY FORMULATION

Very little research in the field is 'pure' in nature; that is, very few people do research in research methodology per se. The use of research skills is mostly 'applied'; that is, they are often used in the development of practice skills and procedures, and the formulation of practice policies. All professions use research methods in varying degrees in many areas. They use the methods and procedures developed by research methodologists in order to increase understanding of different aspects of practice in their own profession and to enhance their professional knowledge base. It is through the application of research methodology that they strengthen and advance their own professional knowledge and skills. Examine your own field. You will find that its professional practice follows procedures and practices tested and developed by others over a long period of time. It is in this testing process that you need research skills, the development of which falls in the category of pure research. As a matter of fact, the validity of your findings entirely depends upon the soundness of the research methods and procedures you adopt.

Within any profession, where you directly or indirectly provide a service, such as health (nursing, occupational therapy, physiotherapy, community health, health promotion and public health), education, psychology or social work, the application of research can be viewed from four different perspectives:

RESEARCH METHODOLOGY

1. the service provider;
2. the service administrator, manager and/or planner;
3. the service consumer; and
4. the professional.

These perspectives are summarised in Figure 1.1. Though it is impossible to list all the issues in every discipline, this framework can be applied to most disciplines and situations in the humanities and the social sciences. You should be able to use this to identify, from the viewpoint of the above perspectives, the possible issues in your own academic field where research techniques can be used to find answers.

RESEARCH: WHAT DOES IT MEAN?

The word 'research' has multiple meanings and its precise definition varies from discipline to discipline and expert to expert. Across disciplines and experts, however, there seems to be agreement with respect to the functions it performs; that is, to find answers to your research questions. You can use any of the research methods/approaches to achieve this objective. These methods range from the fairly informal, based upon clinical impressions, to the strictly scientific, adhering to the conventional expectations of scientific procedures. Research means using one of these methods to find answers to your questions. However, when you say that you are undertaking a research study to find answers to a question, you are implying that the process being applied:

1. is being undertaken within a framework of a set of philosophies;
2. uses procedures, methods and techniques that have been tested for their validity and reliability;
3. is designed to be unbiased and objective.

Your philosophical orientation may stem from one of the several paradigms and approaches in research – positivist, interpretive, phenomenology, action or participatory, feminist, qualitative, quantitative, mixed methods – and the academic discipline in which you have been trained. The concept of 'validity' can be applied to any aspect of the research process. It ensures that in a research study correct procedures have been applied to find answers to a question. 'Reliability' refers to the quality of a measurement procedure that provides repeatability and accuracy. 'Unbiased and objective' means that you have taken each step in an unbiased manner and drawn each conclusion to the best of your ability and without introducing your own vested interest. The author makes a distinction between bias and subjectivity. Subjectivity is an integral part of your way of thinking that is 'conditioned' by your educational background, academic discipline, philosophy, experience and skills. For example, a psychologist may look at a piece of information differently than an anthropologist or a historian. Bias, on the other hand, is a deliberate attempt to either conceal or highlight something because of your vested interest. Adherence to the three criteria mentioned above enables the process to be called 'research'. Therefore, when you say you are undertaking a research study to find the answer to a question, this implies that the method you are adopting fulfils these expectations (discussed later in the chapter).

Bias: A deliberate attempt either to conceal or highlight something that you found in your research or to use deliberately a procedure or method that you know is not appropriate but will provide information that you are looking for because you have a vested interest in it.

Subjectivity: This is an integral part of your way of thinking that is 'conditioned' by your educational background, discipline, philosophy, experience and skills. Bias is a deliberate attempt to change or highlight something which in reality is not there but you do it because of your vested interest. Subjectivity is not deliberate, it is inherent in the way you understand or interpret something.

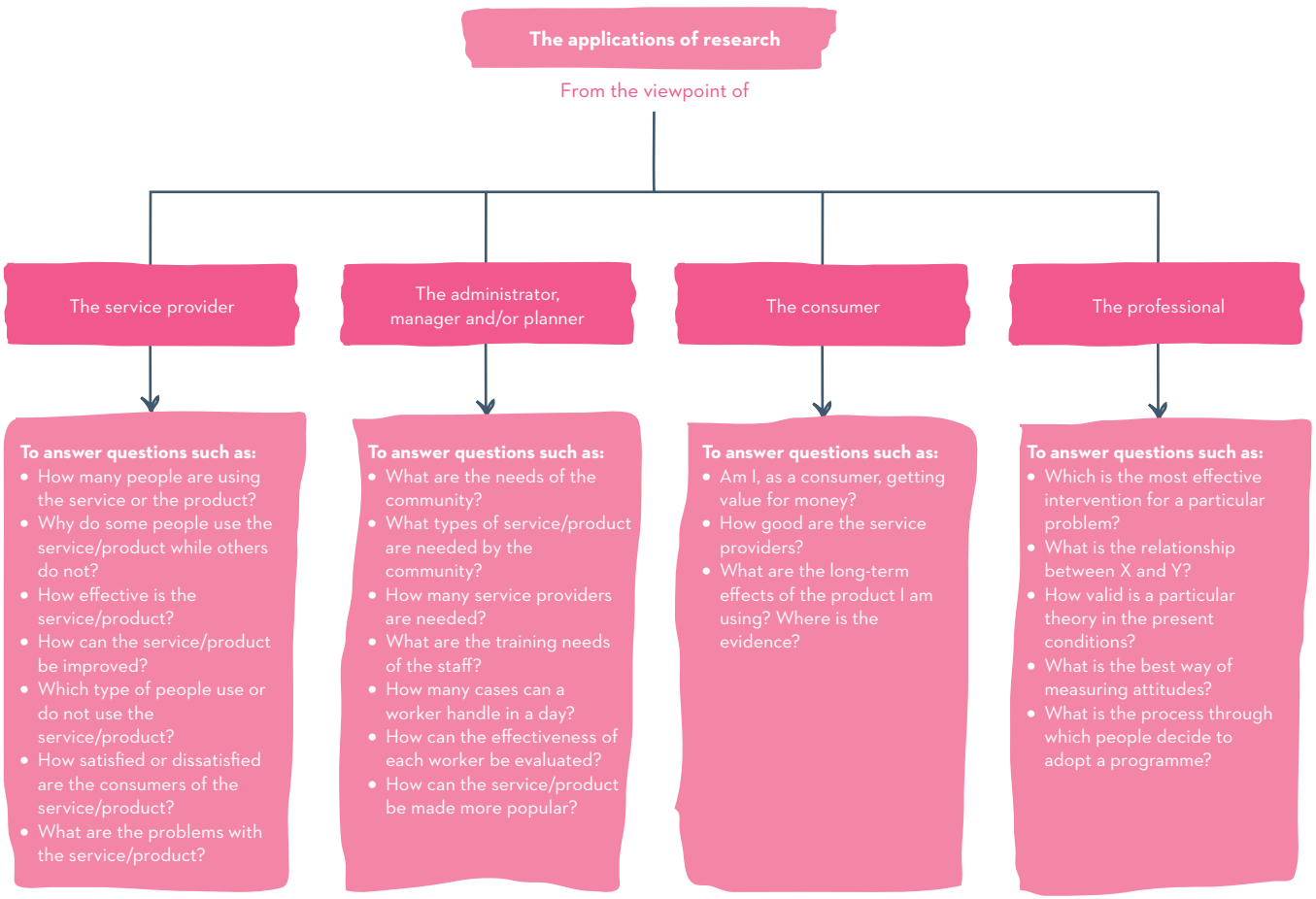

Figure 1.1 The applications of research

However, the degree to which these criteria are expected to be fulfilled varies from discipline to discipline and so the meaning of 'research' differs from one academic discipline to another. For example, the expectations of the research process are markedly different between the physical and the social sciences. In the physical sciences a research endeavour is expected to be strictly controlled at each step, whereas in the social sciences rigid control cannot be enforced as you are studying the human rather than the material world, and sometimes it is not even demanded.

Within the social sciences the level of control required also varies markedly from one discipline to another, as social scientists differ over the need for the research process to meet the above expectations. Despite these differences among disciplines, their broad approach to enquiry is similar. The research model, the basis of this book, is based upon this broad approach.

As a beginner in research you should understand that not all research studies are based upon complex and technical methodologies and have to use statistics and computers. Research can be a very simple activity designed to provide answers to very simple questions relating to day-to-day activities. On the other hand, research procedures can also be employed to formulate intricate theories or laws that govern our lives. The difference between research and non-research activity is, as mentioned, in the way we find answers to our research questions. For a process to be called research, it is important that it meets certain requirements and possesses certain characteristics. To identify these requirements and characteristics let us examine some definitions of research:

> The word *research* is composed of two syllables, *re* and *search*. The dictionary defines the former as a prefix meaning again, anew or over again and the latter as a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles. (Grinnell 1993: 4)

Grinnell further adds: 'research is a structured inquiry that utilises acceptable scientific methodology to solve problems and creates new knowledge that is generally applicable' (1993: 4).

Lundberg (1942) draws a parallel between the social research process, which is considered scientific, and the process that we use in our daily lives. According to him:

> Scientific methods consist of systematic observation, classification and interpretation of data. Now, obviously, this process is one in which nearly all people engage in the course of their daily lives. The main difference between our day-to-day generalisations and the conclusions usually recognised as scientific method lies in the degree of formality, rigorousness, verifiability and general validity of the latter. (Lundberg 1942: 5)

Burns (1997: 2) defines research as 'a systematic investigation to find answers to a problem'.

According to Kerlinger (1986: 10), 'scientific research is a systematic, controlled empirical and critical investigation of propositions about the presumed relationships about various phenomena'. Bulmer (1977: 5) states: 'Nevertheless sociological research, as research, is primarily committed to establishing systematic, reliable and valid knowledge about the social world.'

CHECKPOINT
Defining research

THE RESEARCH PROCESS: ITS CHARACTERISTICS AND REQUIREMENTS

From these definitions it is clear that research is a process for collecting, analysing and interpreting information to answer research questions. But to qualify to be called 'research', the process must have certain characteristics and fulfil some requirements: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical.

Let us briefly examine these characteristics and requirements to understand what they mean:

Controlled: In order to reliably establish a cause-and-effect relationship, it is sometimes important to design a study in such a way that enables you to link cause(s) with the effect(s) and vice versa so that you can study the extent of the impact of the cause on the effect(s).

- Controlled – In real life there are many forces that affect the outcome(s) of an event. In the social sciences, a particular event seldom occurs for a single reason. It is the multiplicity of factors that determine the outcome of an event. It is true that some relationships are easy to understand while there are others more complex and difficult. In almost every relationship, simple or complex, most outcomes are a result of the interplay of a multiplicity of interacting factors. In order to reliably establish a cause-and-effect relationship, it is therefore important to design a study in such a way that enables you to link cause(s) with the effect(s) and vice versa. It is important for such studies to be able to isolate the effect of all other factors that are of no interest to you as a researcher but have a bearing on the outcomes. The concept of control implies that, in exploring causality in relation to two variables, you set up your study in such a way that it either minimises or quantifies (as it is impossible to eliminate) the effects of factors, other than the cause variable, affecting the relationship. This can be achieved to a large extent in the physical sciences, as most of the research is done in a laboratory. However, in the social sciences it is extremely difficult as research is carried out on issues relating to human beings living in society, where such controls are impossible. Therefore, in the social sciences, as you cannot control external factors, you attempt to quantify their impact.
- **Rigorous** – You must be scrupulous in ensuring that the procedures followed to find answers to questions are relevant, appropriate and justified. Again, the degree of rigour varies markedly between the physical and the social sciences and within the social sciences.
- **Systematic** – This implies that the procedures adopted to undertake an investigation follow a certain logical sequence. The different steps cannot be taken in a haphazard way. Some procedures must follow others.
- **Valid and verifiable** – This concept implies that whatever you conclude on the basis of your findings is correct and can be verified by you and others.
- **Empirical** – This means that any conclusions drawn are based upon hard evidence gathered from information collected from real-life experiences or observations.
- **Critical** – Critical scrutiny of the procedures used and the methods employed is crucial to a research enquiry. The process of investigation must be foolproof and free from any drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

TYPES OF RESEARCH

As mentioned earlier, to some extent, the definition of research varies from discipline to discipline and expert to expert. This variation in the definition and understanding of research, to a large extent, can be attributed to the different philosophies that underpin research thinking. Your belief in a particular philosophy underpinning the mode of enquiry shapes your opinion about the appropriateness of the methods for finding answers to your research questions. On the basis of the terminology used to describe types of research in the social science research methodology literature, the author has tried to develop a framework for the classification of research from different perspectives (Figure 1.2). The 'mode of enquiry' perspective classifies the research types on the basis of the different philosophies that guide them, while the 'application' and 'objectives' perspectives look at the research classification from the uses and purposes points of view. The three perspectives that form the basis of this classification are:

1 *applications* of the findings of the research study;
2 *objectives* of the study;
3 *mode of enquiry* used in conducting the study.

The classification of the types of research on the basis of these perspectives is not mutually exclusive – that is, a research study classified from the viewpoint of 'application' can also be classified from the perspectives of 'objectives' and 'enquiry mode' employed. For example, a research project may be classified as pure or applied research (from the perspective of application), as descriptive, correlational, explanatory or exploratory (from the perspective of objectives/purposes) and as qualitative, quantitative or mixed methods (from the perspective of the enquiry mode employed).

Application perspective

If you examine a research endeavour from the perspective of its application, there are two broad categories: pure research and applied research. In the social sciences, according to Bailey (1978: 17):

> Pure research involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. Thus such work often involves the testing of hypotheses containing very abstract and specialised concepts.

Pure research is also concerned with the development, examination, verification and refinement of research methods, procedures, techniques and tools that form the body of research methodology. Examples of pure research include developing a sampling technique that can be applied to a particular situation; developing a methodology to assess the validity of a procedure; developing an instrument, say, to measure the stress level in people; and finding the best way of measuring people's attitudes. The knowledge produced through pure research is sought in order to add to the existing body of knowledge of research methods.

Pure research is concerned with the development, examination, verification and refinement of research methods, procedures, techniques and tools that form the body of research methodology.

Applied research: Most research in the social sciences is applied in nature. Applied research is one where research techniques, procedures and methods that form the body of research methodology are applied to collect information about various aspects of a situation, issue, problem or phenomenon so that the information gathered can be utilised for other purposes such as policy formulation, programme development, programme modification and evaluation, enhancement of the understanding about a phenomenon, establishing causality and outcomes, identifying needs and developing strategies.

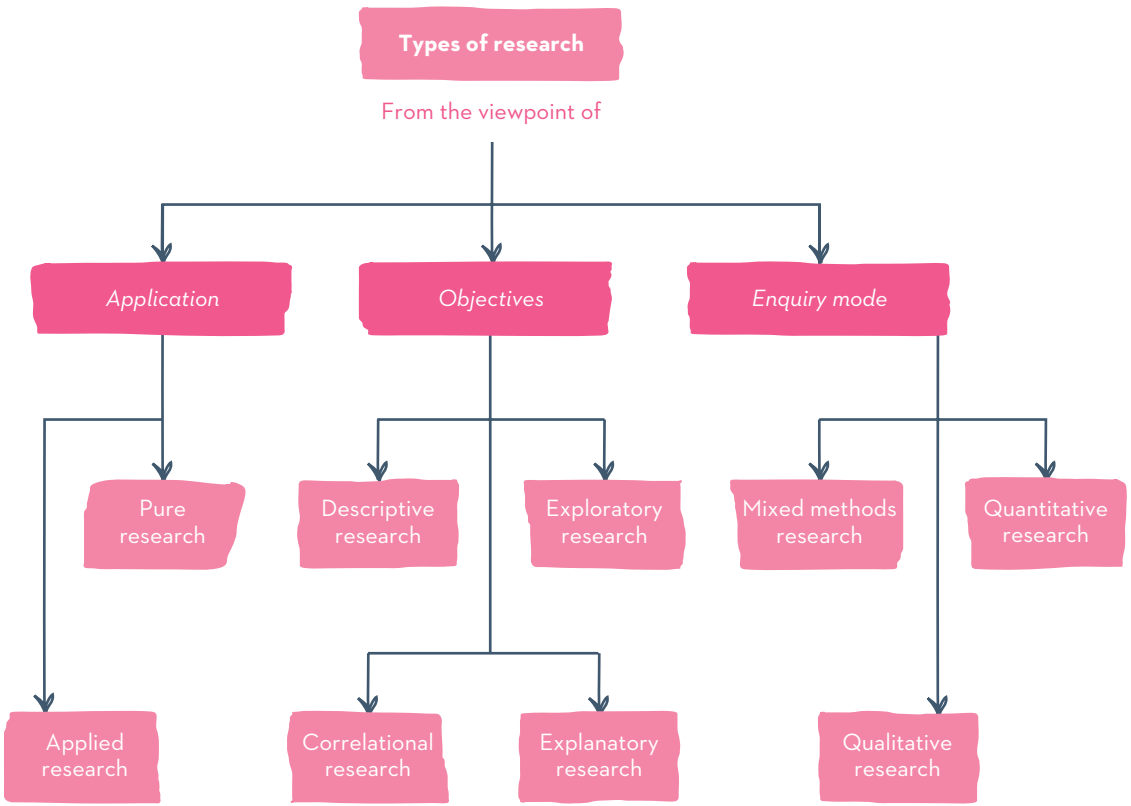

Figure 1.2 Types of research

Most of the research in the social sciences is applied. In other words, the research techniques, procedures and methods that form the body of research methodology are applied to the collection of information about various aspects of a situation, issue, problem or phenomenon so that the information gathered can be used in other ways – such as for policy formulation, administration and the enhancement of understanding of a phenomenon.

Objectives perspective

If you examine a research study from the perspective of its objectives, broadly a research endeavour can be classified as descriptive, correlational, explanatory or exploratory.

A research study classified as a descriptive study attempts to describe systematically a situation, problem, phenomenon, service or programme, or provides information about, say, the living conditions of a community, or describes attitudes towards an issue. For example, it may attempt to describe the types of service provided by an organisation, the administrative structure of an organisation, the living conditions of Aboriginal people in the outback, the needs of a community, what it means to go through a divorce, how a child feels living in a house with domestic violence, or the attitudes of employees towards management. The main purpose of such studies is to describe what is prevalent with respect to the issue or problem under study.

The main emphasis in a correlational study is to discover or establish the existence of a relationship, association or interdependence between two or more aspects of a situation or phenomenon. For example, what is the impact of an advertising campaign on the sale of a product? What is the relationship between stressful living and the incidence of heart attack? What is the relationship between fertility and mortality? What is the relationship between technology and unemployment? What is the effect of a health service on the control of a disease, or the home environment on educational achievement?

Explanatory research attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon. This type of research attempts to explain, for example, why stressful living results in heart attacks; why a decline in mortality is followed by a fertility decline; or how the home environment affects children's level of academic achievement.

The fourth type of research, from the viewpoint of the objectives of a study, is called exploratory research. This is when a study is undertaken with the objective either of exploring an area where little is known or of investigating the possibilities of undertaking a particular research study. In many situations a study could have multiple objectives; that is, some parts of it could be descriptive, some correlational, and some explanatory. As a matter of fact a good study combines all three of these objectives. When the purpose of a study is to determine its feasibility, it is also called a feasibility study or a pilot study. It is usually carried out when a researcher wants to explore areas about which s/he has little or no knowledge. A small-scale study is undertaken to decide if it is worth carrying out a detailed investigation. On the basis of the assessment made during the exploratory study, a full study may eventuate. Exploratory studies are also conducted to develop, refine and/or test measurement tools and procedures. Table 1.1 shows the types of research study from the viewpoint of objectives.

Although, theoretically, a research study can be classified in one of the above objectives-perspective categories, in practice, most studies are a combination of the first three; that is, they contain elements of descriptive, correlational and explanatory research. In this book the guidelines suggested for writing a research report encourage you to integrate these aspects.

Descriptive study: A study in which the main focus is on description, rather than examining relationships or associations, is classified as a descriptive study. A descriptive study attempts systematically to describe a situation, problem, phenomenon, service or programme, or provides information about, say, the living conditions of a community, or describes attitudes towards an issue.

Correlational study: Study which is primarily designed to investigate whether or not there is a relationship between two or more variables.

Explanatory research: In an explanatory study the main emphasis is to clarify why and how there is a relationship between two aspects of a situation or phenomenon.

Exploratory research: This is when a study is undertaken with the objective either to explore an area where little is known or to investigate the possibilities of undertaking a particular research study. When a study is carried out to determine its feasibility it is also called a feasibility or pilot study.

Feasibility study: When the purpose of a study is to investigate the possibility of undertaking it on a larger scale and to streamlining methods and procedures for the main study, the study is called a feasibility study.

Pilot study: see Feasibility study

Mode of enquiry perspective

Broadly, from the perspective of 'mode of enquiry', there are three approaches that are used in social research to find answers to your research questions. These are:

- the quantitative or structured approach;
- the qualitative or unstructured approach; and
- the mixed methods approach.

The core difference between the three is the extent of flexibility permitted to you as a researcher in the research process. In the quantitative or structured approach of enquiry everything that forms the research process – objectives, design, sample, the questions that you plan to ask of your respondents – is predetermined. The unstructured or qualitative approach, by contrast, allows you as a researcher complete flexibility in all these aspects of the process. The mixed methods approach has attributes from both the other approaches, that is, some aspects of the research process may have flexibility and others may completely lack it, depending upon the paradigm to which they belong.

The **quantitative approach** is rooted in the philosophy of rationalism; follows a rigid, structured and predetermined set of procedures to explore; aims to quantify the extent of variation in a phenomenon; emphasises the measurement of variables and the objectivity of the process; believes in substantiation on the basis of a large sample size; gives importance to the validity and reliability of findings; and communicates findings in an analytical and aggregate manner, drawing conclusions and inferences that can be generalised.

The **qualitative approach,** on the other hand, is embedded in the philosophy of empiricism; follows an open, flexible and unstructured approach to enquiry; aims to explore diversity rather than to quantify; emphasises the description and narration of feelings, perceptions and experiences rather than their measurement; and communicates findings in a descriptive and narrative rather than analytical manner, placing no or less emphasis on generalisations.

Mixed/multiple methods approach: In extremely simple terms, the mixed methods approach to social research is when you combine two or more methods to collect and analyse data pertaining to your research problem. When these methods are from both paradigms, that is, when a study uses both quantitative and qualitative methods, it is classified as mixed methods approach. However, when these are from one paradigm only, it is called multiple methods approach. The approach is based upon the rationale that for certain situations qualitative techniques are better and for others quantitative ones are better. Hence, to get the best outcome for a research study you need to combine both approaches or use more than one method.

The mixed methods approach uses the strengths of both quantitative and qualitative research. It aims to select the best methods, regardless of the qualitative–quantitative divide, to find answers to the research questions. In extremely simple terms, the mixed methods approach to social research combines two or more methods to collect and analyse data pertaining to the research problem. These methods could be either a mix of quantitative and qualitative or belong to only one paradigm. The approach is based upon the rationale that for certain situations qualitative techniques are better and for some others the quantitative. Hence, to get the best outcome for a research study you need to combine both approaches or use more than one method.

The quantitative or structured approach is more appropriate to determine the *extent* of a problem, issue or phenomenon, whereas the qualitative or unstructured approach is predominantly used to explore its *nature*, in other words the variation or diversity per se in a phenomenon, issue, problem or attitude towards an issue. For example, if you want to find out the different perspectives on an issue or the problems experienced by people living in a community, then these are better explored by using unstructured enquiries. On the other hand, to find out how many people have a particular perspective, how many people have a particular problem or how many people hold a particular view, you need to have a structured approach to enquiry. If you need to look into these

Table 1.1 Types of research studies from the perspective of objectives

Examples	Aim	Main theme	Type of research
• Socioeconomic characteristics of residents of a community • Attitudes of students towards quality of teaching • Types of service provided by an agency • Needs of a community • Sale of a product • Attitudes of nurses towards death and dying • Attitudes of workers towards management • Number of people living in a community • Problems faced by new immigrants • Extent of occupational mobility among immigrants • Consumers' likes and dislikes with regard to a product • Effects of living in a house with domestic violence • Strategies put in place by a company to increase productivity of workers	To describe what is prevalent regarding: • a group of people • a community • a phenomenon • a situation • a programme • an outcome	To describe what is prevalent	**Descriptive research**
• Impact of a programme • Relationship between stressful living and incidence of heart attacks • Impact of technology on employment • Impact of maternal and child health services on infant mortality • Effectiveness of a marriage counselling service on extent of marital problems • Impact of an advertising campaign on sale of a product • Impact of incentives on productivity of workers • Effectiveness of an immunisation programme in controlling infectious disease	To establish or explore: • a relationship • an association • an interdependence	To ascertain if there is a relationship	**Correlational research**
• Why does stressful living result in heart attacks? • How does technology create unemployment/ employment? • How do maternal and child health services affect infant mortality? • Why do some people have a positive attitude towards an issue while others do not? • Why does a particular intervention work for some people and not for others? • Why do some people use a product while others do not? • Why do some people migrate to another country while others do not? • Why do some people adopt a programme while others do not?	To explain: • why a relationship, association or interdependence exists • why a particular event occurs	To explain why the relationship is formed	**Explanatory research**

aspects, you will need to use both approaches; that is, you will need to use the mixed methods approach. Even if your interest is in finding out how many people have a particular problem or hold a particular view, before undertaking a structured enquiry, in the author's opinion, an unstructured enquiry must be undertaken to ascertain the diversity in a phenomenon which can then be quantified through a structured enquiry. Both approaches have their place in research. Both have their strengths as well as weaknesses. Therefore, you should not 'lock' yourself solely into a structured or unstructured approach.

The structured approach to enquiry, as you know, is classified as quantitative research and unstructured as qualitative research, and the mixed methods approach could be either entirely quantitative or qualitative or some sections could be qualitative and some quantitative. The divide between the two is based upon the philosophies of rationalism and empiricism and the difference in attitude towards acquiring knowledge. Rationalism is based upon the belief that 'human beings achieve knowledge because of their capacity to reason' and empiricism upon the belief that 'the only knowledge that human beings acquire is from sensory experiences' (Bernard 1994: 2). Mixed methods, as mentioned earlier, can combine the attributes of both. The distinction between quantitative, qualitative and mixed method research, in addition to the philosophies underpinning them and the structured/unstructured process of enquiry, is also dependent upon some other considerations which are briefly presented in Table 1.2. The choice between the quantitative, qualitative and mixed methods approaches should depend upon:

- **the aim of your enquiry** – exploration, confirmation or quantification;
- **the use of the findings** – policy formulation or process understanding.

A study is classified as qualitative if the purpose of the study is primarily to describe a situation, phenomenon, problem or event; that is, if the information is gathered through the use of variables measured on nominal or ordinal scales (qualitative measurement scales); and if the analysis is done to establish the variation in the situation, phenomenon or problem without quantifying it. The historical enumeration of events, an account of the different opinions people have about an issue, and a description of an observed situation such as the living conditions of a community are examples of qualitative research.

On the other hand, the study is classified as quantitative if you want to quantify the variation in a phenomenon, situation, problem or issue; if information is gathered using predominantly quantitative variables; and if the analysis is geared to ascertaining the magnitude of the variation. Examples of quantitative aspects of a research study are: how many people have a particular problem, and how many people hold a particular attitude.

The use of statistics is *not* an integral part of a quantitative study. The main function of statistics is to act as a test to confirm or contradict the conclusions that you have drawn on the basis of your understanding of analysed data. Statistics, among other things, help you to quantify the magnitude of an association or relationship, provide an indication of the confidence you can place in your findings and help you to isolate the effect of different variables.

It is strongly recommended that you do not lock yourself into becoming either solely a quantitative or solely a qualitative researcher. It is true that there are disciplines that lend themselves predominantly either to qualitative or to quantitative research. For example, such disciplines as anthropology, history and sociology are more inclined towards qualitative research, whereas psychology, epidemiology, education, economics, public health and marketing are more inclined towards quantitative research. However, this does not mean that an economist or a psychologist never uses the qualitative approach, or that an anthropologist never uses quantitative information.

There is increasing recognition by most disciplines in the social sciences that both types of research are important for a good research study. The research problem itself should determine whether the study is carried out using quantitative or qualitative methodologies.

As both qualitative and quantitative approaches have their strengths and weaknesses, advantages and disadvantages, 'neither one is markedly superior to the other in all respects' (Ackroyd & Hughes 1992: 30). The measurement and analysis of the variables about which information is obtained in a research study are dependent upon the purpose of the study. In many studies you need to combine both qualitative and quantitative approaches. For example, suppose you want to find out the types of service available to victims of domestic violence in a city and the extent of their utilisation. Types of service are the qualitative aspect of the study as finding out about them entails description of the services. The extent of utilisation of the services is the quantitative aspect as it involves estimating the number of people who use the services and calculating other indicators that reflect the extent of utilisation. The mixed methods approach combines the strengths of both paradigms to best achieve the objectives of your research. It replaces those weaknesses of a design had we used methods from one paradigm only.

It is important for you to understand that, as compared to mixed methods, both quantitative and qualitative approaches have well-developed methodologies and methods. In most situations the methods and procedures of both quantitative and qualitative approaches are used in the mixed methods approach. Table 1.2 looks at the differences between the three from different perspectives.

CHECKPOINT
Qualitative, quantitative and mixed methods research

IMPORTANT NOTE TO READERS

Both quantitative and qualitative approaches have their own body of theoretical knowledge comprised of their common as well as respective methods, models and procedures. Their respective theoretical knowledge base, in this book, is detailed in relation to the operational steps which provide both the framework and the structure for the book. As the mixed methods approach is of very recent origin, to the best of the author's knowledge and understanding, it does not have an extensive body of methodological literature. It mostly uses methods, models and procedures of the quantitative and/or qualitative approaches. Therefore the book does not detail separately, under each operational step, the theoretical knowledge for the mixed methods approach.

When using mixed methods you first need to decide which methods are most appropriate to best achieve the objectives of your study. Specific methods and procedures that you are likely to use as a part of the mixed methods approach are mostly either quantitative or qualitative, hence are detailed either as quantitative or qualitative methods and procedures in this book. To learn details about these methods you need to consult the pertinent sections describing quantitative or qualitative approaches.

The next section in this chapter provides details about different aspects such as definition, philosophy, advantages and disadvantages, forms of mixing of the mixed methods approach. It details aspects that will help you to develop a greater understanding of the mixed methods approach per se and provides background information about it as appropriate.

The sole aim of the section below is to provide you, as a beginner in research methods, information sufficient to give you some understanding of the mixed methods approach as such. Also, the emphasis is on providing practical

Table 1.2 Differences between qualitative, quantitative and mixed methods approaches

Difference with respect to:	Quantitative approach	Qualitative approach	Mixed methods approach
Underpinning philosophy	Rationalism: 'That human beings achieve knowledge because of their capacity to reason' (Bernard 1994: 2)	Empiricism: 'The only knowledge that human beings acquire is from sensory experiences' (Bernard 1994: 2)	Both are valuable to social research theory and practice. That knowledge can be gained through both the capacity to reason and sensory experiences.
Approach to enquiry	Structured/rigid/predetermined methodology	Unstructured/flexible/open methodology	Can be structured, unstructured or both
Main purpose of investigation	To quantify the extent of variation in a phenomenon, situation, issue, etc.	To describe variation in a phenomenon, situation, issue, etc.	To quantify and/or explore with multiple or mixed methods a phenomenon to enhance accuracy or yield greater depth
Measurement of variables	Emphasis on some form of either measurement or classification of variables	Emphasis on description of variables	Measurement and/or description
Sample size	Emphasis on greater sample size	Fewer cases	Larger sample size for some aspects and smaller for others, depending upon the purpose
Focus of enquiry	Narrows focus in terms of extent of enquiry, but assembles required information from a greater number of respondents/sources	Covers multiple issues but assembles required information from fewer respondents	Narrow or broad, or both, depending upon the methods used
Dominant research topic	Explains prevalence, incidence, extent, nature of issues, opinions and attitude; discovers regularities and formulates theories	Explores experiences, meanings, perceptions and feelings	Both or either, depending upon the methods used
Analysis of data	Subjects variables to frequency distributions, cross-tabulations or other statistical procedures	Subjects responses, narratives or observational data to identification of themes and describes these	Quantitative or qualitative or both, depending upon the objectives
Dominant research value	Reliability and objectivity (value-free)	Authenticity, but does not claim to be value-free	Dominant value of one or both of the paradigms
Communication of findings	Organisation more analytical in nature, drawing inferences and conclusions, and testing magnitude and strength of a relationship	Organisation more descriptive and narrative in nature	Similar to the quantitative and/or qualitative approach

knowledge rather than detailing historical, philosophical and conceptual issues and debates about it. In doing so an attempt is also made not to make things too complicated but simply to make you aware of the mixed methods approach to research enquiry. You can consult books on the mixed methods approach referenced in this book for greater understanding.

THE MIXED/MULTIPLE METHODS APPROACH

Introduction

Though the mixed methods approach in social research has been in use for a 'long time', it has attained its recognition and prominence only during the last two decades. According to Creswell and Clark (2011: xix), 'mixed methods has had its roots over the last 20 years in several disciplines'; however, 'in the past 5 to 10 years we have seen tremendous interest in this approach to research'. According to Teddlie and Tashakkori (2009: 7), 'The [mixed methods] research tradition is less well known than the [quantitative] or [qualitative] traditions because it has emerged as a separate orientation during only the past 20 years'. To the author's mind, it is more than a methodology but a philosophy that has come to be recognised as an approach during the last 20 years or so. It is based upon the assumption that, for certain situations, to enhance the accuracy and meaningfulness of your conclusions, to have a complete picture of a situation and to reconfirm your findings you need to use more than one method belonging to one or both of the paradigms. The core of the mixed/multiple methods approach is the use of multiple methods belonging to both paradigms, or simply of more than one method from one paradigm. Many research experts (Bernard 1994; Brewer & Hunter 1989; Creswell & Clark 2011; Tashakkori & Teddlie 1998; Teddlie & Tashakkori 2009) have advocated the use of mixed methods approach in social research. According to Bernard (1994: 1), 'whatever our theoretical orientation, a sound mix of qualitative and quantitative data is inevitable in any study of human thought and behaviour'. According to Brewer and Hunter (1989: 22), 'Since the fifties, the social sciences have grown tremendously. And with that growth, there is now virtually no major problem-area that is studied exclusively within one method.' According to Tashakkori and Teddlie (1998: 5), 'most major areas of research in social and behavioural sciences now use multiple methods as a matter of course'. Such studies that use more than two or more methods, either from one or both the paradigms, to enhance accuracy of the findings, are said to be using a mixed/multiple methods approach.

Defining the approach

According to Creswell and Clark (2011: 2), 'several definitions for mixed methods have emerged over the years that incorporate various elements of methods, research processes, philosophy, and research design'. In extremely simple terms, mixed methods is an approach, rather a philosophy, to social enquiry that uses two or more methods, processes and (in certain situations) philosophies in undertaking a research study. It is based upon the belief that different paradigms and methods have different strengths and, for certain situations, their combined strength would result in improving the depth and accuracy of the findings. The mixed methods approach aims to best achieve the objectives of a study by combining the strengths of different methods and paradigms. According to Teddlie

and Tashakkori (2009: 7), 'Mixed methodologists present an alternative to the QUAN and QUAL traditions by advocating the use of whatever methodological tools are required to answer the research questions under study'. According to them, 'mixed method studies are those that combine the qualitative and quantitative approaches into the research methodology of a single study or multi-phased study' (Tashakkori & Teddlie 1998: 17–18). Writers such as Bryman (2004) and Creswell and Clark (2007) also believe that to be called a mixed methods approach the methods you use must be from both the paradigms. According to Creswell and Clark (2007: 5), 'as a method, it focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone.' Tashakkori and Tedllie (1998: ix) define 'mixed methods as a combining of quantitative and qualitative approaches in the methodology of a study'. They consider the mixed methods design as one where you mix quantitative and qualitative methods. Johnson et al. (2007: 113) define mixed methods research as 'the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes, breadth, depth of understanding, and corroboration'.

However, there are others such as Alexander et al. (in Gilbert 2008: 126) who consider an approach to be a mixed methods approach even if the methods used are from only one paradigm; that is, two or more methods could be from both the paradigms or they can be from one of them. According to them, 'mixed methods research seems, self-evidently, to be the use of two or more methods in a single research project (or research programme)'. Writers such as Cronin et al. (2007) also subscribe to the view of Alexander et al. They 'suggest that those studies that even use two different quantitative or qualitative methods can be said to be using a mixed methods approach'.

It is evident from the above definitions that there are two opinions with respect to the definition of a mixed method study (Figure 1.3). The first advocates that the two methods must be from both the paradigms, that is, one must mix quantitative and qualitative methods (Teddlie & Tashakkori 2009; Tashakkori & Teddlie 1998; Bryman 2004; Cresswell & Clark 2007). The second suggests that even if both the methods are from the same paradigm, a study using two methods is considered as a mixed methods study (Gilbert 2008; Chapter 7, Cronin et al. 2007). The present author also believes that for a study to be classified as a mixed methods study, the two or more methods it uses could come from either or both the paradigms.

Though the term 'multiple methods approach' is not much in use nowadays or is used interchangeably with 'mixed methods approach' by some, the author makes a distinction between 'multiple' and 'mixed' methods approaches. The term 'mixed methods', according to the author, is used for situations where different elements of the research process are combined from both the quantitative and qualitative approaches, and 'multiple methods' when the methods selected are from one paradigm only.

Combining or mixing of different methods in both these viewpoints is done with the aim of taking advantage of the strengths of both paradigms, and, in the case of multiple methods belonging to the same paradigm, of enhancing and enriching the accuracy, validity and reliability of the findings. There is no single approach that, always and in all situations, can accurately find answers to all your research questions. In some situations you need to use different methods for different research questions or objectives that guide your study. Also there are situations 'in which one data source may be insufficient, results need to be explained, exploratory findings need to be generalized, a second method is needed to enhance a primary method, a theoretical stance needs to be employed, and an overall research objective can be best addressed with multiple phases or projects' (Creswell &

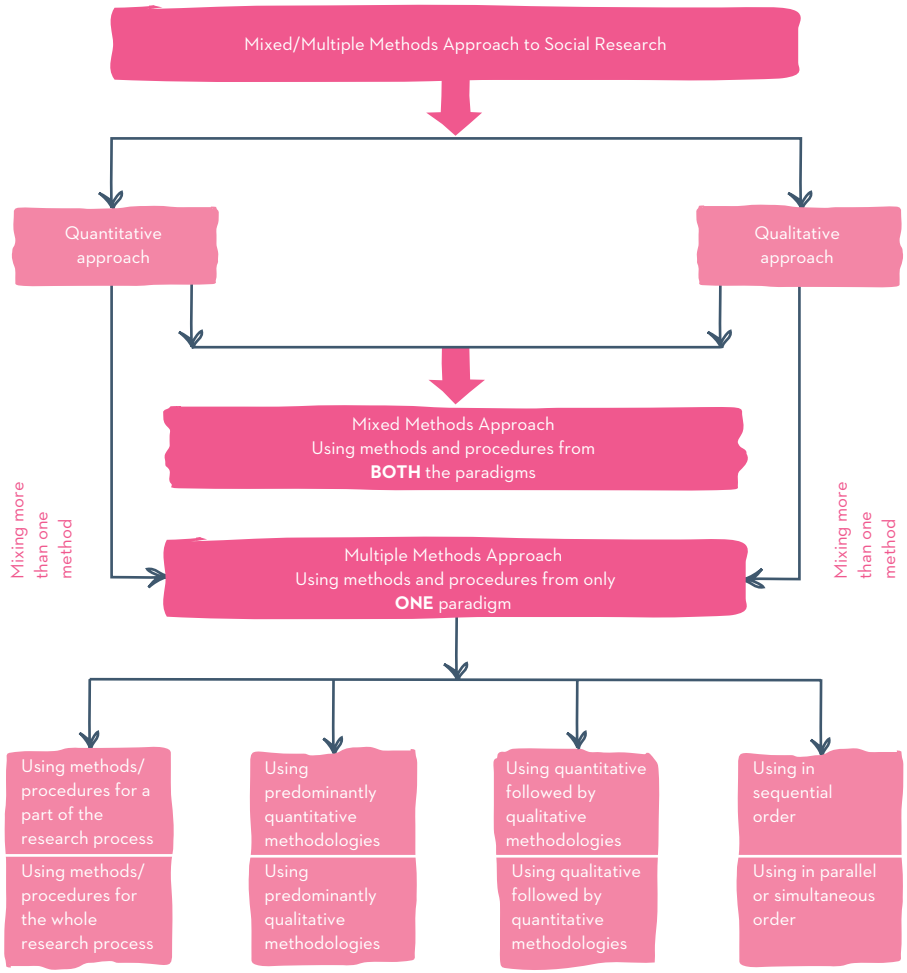

Figure 1.3 **Mixed/multiple methods, quantitative and qualitative approaches in social research**

Clark 2011: 8). The mixed/multiple methods approach lets you choose the methods that are best suited for your study from within or across paradigms.

There is another consideration you need to keep in mind when defining a mixed methods approach. Many researchers often use two different methods, quantitative and/or qualitative, for only one operational step, that of data collection. For example, you may conduct in-depth interviews with some members of the study population to further understand the issues identified by them in the data collected through the use of a questionnaire. A similar situation is when, for example, you want to develop a questionnaire to ascertain the needs of a community and, to do so, you conduct a number of in-depth or focus group interviews with some of the community members or organise a community forum to establish the diversity of needs. This process of identifying the diversity of needs becomes the basis for developing the questionnaire or interview schedule. The issue is: do you classify such studies as mixed or multiple methods studies where you use more than one method only for collecting data? The complete replication of a study, using two approaches, is quite expensive and hence not common. The author considers a study to be using multiple or mixed methods approach even though it uses more than one method for a single operational step. In the author's opinion the use of more than one method in the following situations will qualify a study to be classified as using a mixed/multiple methods approach:

- **Collecting data** using different methods for information gathering; that is, you can collect the same data through a questionnaire or an interview schedule (quantitative methods) as well as through in-depth interviews, focus groups or a community forum (qualitative methods). Using multiple methods for data collection will qualify a study to be classified as mixed/multiple methods (depending upon whether the methods are from both or single paradigm). Of course, you also need to use different methods for data analysis and processing to match with the methods of data collection.
- Collecting the required information from different groups of people, for verification and confirmation of findings, drawn from the same study population (**different samples**). In other words, selecting one sample for administering, say, a questionnaire, selecting another for in-depth interviewing and selecting the third to form a focus group for gathering similar information for validation, verification and greater understanding of the issues.
- Using different ways of **data analysis** and **information dissemination**; that is, analysing data with quantitative as well as qualitative techniques to best achieve the objectives of a study.

Tashakkori and Teddlie (1998) differentiate between the two by using two different names. According to them (p. 1), 'mixed methods combine the qualitative and quantitative approaches to the research methods of a study, while mixed models studies combine these two approaches across all phases of the research process'. In the author's opinion it is the use of two or more methods, either quantitative, qualitative or both, for the whole or a part(s) of the research process, that constitutes the mixed/multiple methods approach.

CHECKPOINT
The mixed methods approach

It is important for you to understand that the way you formulate your research problem or subobjective(s) determines the types of method that are appropriate for finding their answers. Let us take an example (Figure 1.4) to further understand the relationship between the way a subobjective is formulated and the types of method that are appropriate to study it and how the methods used determine the typology of the approach

adopted. Also note that to achieve different objectives you need to use different research approaches. For some it is purely quantitative, for some purely qualitative and for some it is a mixed methods approach.

Suppose you are interested in the area of domestic violence and want to conduct a study with the following subobjectives (you can select just one subobjective to study if you wish):

1. to determine the prevalence of domestic violence in a community;
2. to understand the nature and extent of domestic violence in the community;
3. to find out what it means for a woman and a man to live in a household with domestic violence;
4. to understand why, in spite of domestic violence, some victims, men as well as women, continue to live in the relationship;
5. to describe the types of service available to victims of domestic violence in a community; and
6. to establish the socioeconomic-demographic profile of people who are consumers of these services.

To achieve these objectives, the study needs to be carried out by using different methods. For example:

- Subobjective 1 can only be studied through methods that fall into the quantitative category (counting the number of households with domestic violence episodes determined by using a predetermined and accepted set of criteria).
- For subobjective 2, you need to use methods that fall into both paradigms. The 'nature' of domestic violence can best be explored through qualitative methods (such as in-depth interviews, focus groups, narratives, oral histories) and its 'extent' through quantitative methods (such as structured household interview, records of agencies providing services to victims of domestic violence).
- Subobjective 3 you can best explore using a qualitative methodology (in-depth interviews, group interviews with victims, narratives, oral histories, case studies) as no quantitative method will give you more accurate information on 'what it means' to a victim to live in a house with domestic violence.
- The reasons for living in the relationship in spite of violence (subobjective 4) can be investigated through a number of methods belonging to both paradigms (you can conduct in-depth interviews, structured interviews, group interviews, focus groups). You can collect information using one method only or a number of them.
- Similarly 'types of service' (subobjective 5) you can best study through a qualitative approach (in-depth interviews with service providers and consumers of the services).
- Finally, the 'profile of consumers' (subobjective 6) is best investigated by quantitative methods (questionnaire or interview schedule).

In the above example you will note that we have proposed different methods for different subobjectives of the study. Studies like this that make use of the strengths of different methods, irrespective of the paradigm they

Suppose you are interested in the area of domestic violence and want to conduct a study with the following subobjectives (you can select even one subobjective to study if you so desire):

1 To determine the prevalence of domestic violence in a community;
2 To understand the nature and extent of domestic violence in the community;
3 To find out what it means for a woman and a man to live in a household with domestic violence;
4 To understand why, in spite of domestic violence, some women continue to live in the relationship;
5 To describe the types of service available to victims of domestic violence in a community; and
6 To establish the socioeconomic demographic profile of people who are consumers of these services.

To achieve these objectives, the study needs to be carried out by using different methods. For example:

Subobjective 1 can only be studied through methods that fall into the category of quantitative methods (counting the number of households with domestic violence episodes determined by using a predetermined and accepted set of criteria).

For subobjective 2, you need to use methods that fall into both the paradigms. 'Nature' of domestic violence can best be explored through methods (such as in-depth interviews, focus groups, narratives, oral histories) that fall in the domain of qualitative research and 'extent' through methods (such as structured household interview, records of agencies providing services to victims of domestic violence) that are considered to be belonging to the quantitative paradigm.

Subobjective 3 can best be explored using qualitative methodology (in-depth interviews, group interviews with victims, narratives, oral histories, case studies), as no quantitative method will give you more accurate information on 'what does it mean' to a victim to live in a house with domestic violence.

The reasons for living in the relationship in spite of violence (subobjective 4), can be investigated through a number of methods belonging to both paradigms (you can conduct in-depth interviews, structured interviews, group interviews, focus groups; you can collect information through one method only or through a number of them).

Similarly 'types of service' (subobjective 5) can best be studied through a qualitative approach (in-depth interviews with service providers and consumers of the services).

And

The 'profile of consumers' (subobjective 6), can be better investigated by quantitative methods (questionnaire or interview schedule).

Figure 1.4 Use of mixed and multiple methods – an example

belong to and make use of multiple methods belonging to the same paradigm, are classified as mixed or multiple methods studies. If the methods used are from both paradigms, it is a mixed methods study and if they are from the same paradigm, it is a multiple method study. In brief, any study that uses more than one method belonging to either one and/or the other paradigm for either the total or partial research process, to best achieve the objectives of a study, is classified as mixed/multiple methods study.

Rationale underpinning the approach

The rationale underpinning the mixed/multiple methods approach is primarily based upon two beliefs. The first relates to the ability of the methods of a paradigm to provide accurate answers to all your research questions in all situations. The second relates to the belief that the use of more than one method in most situations will provide a better and more complete picture of a situation or phenomenon than a single method alone. Specifically, these beliefs are:

- The way you formulate your subobjectives determines whether a study would lend itself to a quantitative or qualitative mode of enquiry. Most of the time a study has several subobjectives (Figure 1.4) not all of which lend themselves to be extensively and accurately explored by the methods of a single paradigm. It often happens that some subobjectives are better explored through quantitative methods and others through qualitative methods. In situations like this if you use methods from only one paradigm, you will compromise the quality of your findings. The mixed methods approach is based upon the belief that, in certain situations, use of methods from both the paradigms will certainly enhance the accuracy and reliability of the findings. Openness to the use of methods from both paradigms in a study to best achieve its objectives is the underpinning philosophy of the mixed methods approach.
- In certain circumstances a single method may not provide a complete, detailed and accurate picture of the situation. Or, in some instances, to be absolutely certain you may want to double-check your findings by using another method. The use of multiple methods is based upon the belief that in certain situations the accuracy of your findings can be enhanced by using more than one method from a paradigm.

When to use the approach

Several reasons warrant the use of mixed or multiple methods approach. Some of these reasons are as follows:

- **When you want to explore from both perspectives.** Qualitative and quantitative research will look at a phenomenon from different perspectives. The qualitative perspective looks at the phenomenon in depth but is based upon information collected from a few individuals, hence is limiting in making generalisations and broad conclusions. On the other hand, the quantitative approach gathers information from many individuals so that it has the ability to make generalisations but is limited in terms of in-depth analysis. Taking a purely quantitative or purely qualitative approach would give the study the strengths as well weaknesses of the

approach. It is to overcome the weaknesses of the approach and make use of the strengths of the other approach that you combine both. By combining both perspectives you can have a more complete picture and understanding of a phenomenon from both perspectives.

- **When accurate and complete information from one source is difficult to obtain.** Sometimes there are situations when you are unable to have complete and accurate information about a situation through the use of a single method from either approach. To fill such gaps you need to supplement the information by other methods, thus taking a mixed methods approach. According to Creswell and Clark (2011: 8), 'research problems suited for mixed methods are those in which one data source may be insufficient, results need to be explained, exploratory findings need to be generalized, a second method is needed to enhance a primary method, a theoretical stance needs to be employed, and an overall research objective can be best addressed with multiple phases or projects'. The author was involved in a study to ascertain the number of births and deaths in rural India. To accurately estimate the number of births and deaths two secondary and two primary sources were used. These included: records kept by a government-appointed official responsible for maintaining vital statistics records in rural areas (secondary source); a village midwife who every fortnight was visited by a member of the research team to collect, through informal interviewing, information on births and deaths during the previous fortnight (primary source); ten 'key informants' selected from the residents of the village for the duration of the study and who were contacted every fortnight by a member of the research team (primary source); and the resident midwife nurse, an employee of the research team, who was responsible for sending a monthly report on birth and deaths in her area during the previous month (secondary source). All these reports were compared (triangulated) to ascertain the total number of births and deaths in the area. It is in situations like this, where you want to collect factual information on a longitudinal basis and want to be sure of the accuracy of the information, that you need to use more than one method, the mixed/multiple methods approach.

- **A must for good quality research.** Almost every good researcher who aims to undertake a study in order to make generalisations first explores different aspects of the study by undertaking an exploratory phase which mostly uses qualitative methodology. Everything needed for a quantitative study is usually developed on the basis of an exploratory study. It is also not uncommon that after completing the study you take your findings back to the respondents for explanations and clarifications. In the author's opinion a good researcher always follows a 'qualitative–quantitative–qualitative' cycle of enquiry. Hence, to enhance the quality of your research, you need to mix both approaches and on occasions use more than one method.

- **When you need to make generalisations.** When your aim is to make generalisations on the basis of your study as well as share the findings with the study population, it is good practice to develop issues you want to explore and questions you would like to ask your respondents, in consultation with potential respondents. Development and sharing can best be undertaken by qualitative approaches. In such situations you need to combine both qualitative and quantitative methodologies.

- **When you need to find an explanation for your findings.** There are situations when the findings from a quantitative approach need elaboration as to the exact meaning of the responses given by the respondents. These exact meanings can only be understood when discussed with the respondents. In such situations you

need to combine quantitative methods with qualitative ones to further understand the responses. According to Creswell and Clark (2011: 9), 'Sometimes the result of a study may provide an incomplete understanding of a research problem and there is a need for further explanation. In this case, a mixed methods study is used with the second database helping to explain the first database. A typical situation is when quantitative results require an explanation as to what they mean.'

- **When you want to develop a good data collection instrument and ascertain the validity of the questions.** It is a common practice in quantitative studies to develop data collection instruments in consultation with the potential respondents to ensure their relevance. This consultative process entails the use of qualitative methodologies. In addition, this process will ensure the validity of the questions by exploring whether or not the respondents interpreted and understood them as intended by the researcher.
- **When you undertake studies with multiple objectives.** Situations when a study has multiple objectives and not all of them lend themselves to a single approach warrant the collection of data through the use of either quantitative and qualitative approaches or having two sets of data collected through two either quantitative or qualitative methods.

Ways of mixing methods

The 'typology' developed here does not strictly reflect the study designs per se but the different ways in which methods and procedures from quantitative and qualitative approaches are mixed with regard to when, what, at what stage, in what order and to what extent. The designs, procedures and methods are primarily those of quantitative and/or qualitative research.

There are several ways in which you can mix methods and procedures belonging to quantitative and/or qualitative paradigms in mixed or multiple methods studies. The types of *mixed methods study design*, as identified by Tashakkori and Teddlie (1998: 18), according to the author, are primarily based upon the way the methods are mixed. The author feels that the classification or 'typology of studies' within mixed and multiple methodologies predominantly depends upon *what* is being mixed (whether mixing is from both paradigms or just one), *when* in the research process the mixing is done (whether mixing is in a sequential or simultaneous order), *at what stage* of the research process mixing is taking place (whether mixing is for a part or whole of the research process), *in what order* mixing occurs (whether it is qualitative followed by quantitative or quantitative followed by qualitative or both together) and *to what extent* (whether predominantly quantitative or qualitative).

In terms of *what*, there are broadly two ways in which you can mix different methods:

- Mix methods belonging to both paradigms either for the whole or a part of the research process.
- Mix methods belonging to only one paradigm either for the whole or a part of the process.

In terms of *when*, again there are two ways:

- Use two or more methods one after the other (sequentially) either for the whole research process or a part of it. Creswell (1995: 177) calls studies using methods one after the other as *sequential studies*.

- Use two or more methods concurrently either for the whole or a part of the process. Creswell (1995: 177) calls studies using methods concurrently *parallel* or *simultaneous studies*.

In terms of *stage*, there are two ways:

- Mix them for the whole of the research process.
- Mix them only for one or some operational steps.

In term of *order*, there are three ways in which you can mix methods:

- Use qualitative methods followed by quantitative.
- Use quantitative methods followed by qualitative.
- Use qualitative methods followed by quantitative followed again by qualitative.

In terms of *extent*, there are two ways of mixing:

Equivalent status studies: A mixed methods study where both methodologies are equally applied is classified as an equivalent status study.

Dominant/less dominant studies: A mixed methods study where one methodology dominates the study is classified as dominant/less dominant study.

- Use both methodologies equally (equivalent status studies: Creswell 1995: 177).
- Use one methodology predominantly (dominant/less dominant studies: Creswell 1995: 177). When, in conducting a study, the methods are mixed in such a way that one paradigm dominates, with a small proportion of the methods/procedures drawn from the other.

Advantages and disadvantages

The use of mixed methods in a research project has both advantages as well as disadvantages. Some of the main advantages are as follows:

- **Enhancement of research possibilities.** In situations where you have multiple objectives to achieve in a research study and if not all the objectives lend themselves to be explored with one method, use of multiple methods offers a way to find answers to all your research questions. For instance, in the example in Figure 1.4, subobjective 2 has two dimensions, 'nature' and 'extent'. These two concepts require different methodologies. 'Nature' can be explored more richly through qualitative methods, whereas 'extent' is better explored through quantitative methods as it involves counting the number of households with occurrence of domestic violence. Similarly, suppose you want to ascertain the prevalence of drug use in a community and the process of becoming a drug addict. The first part you can investigate through a number of methods such as structured interviewing or a questionnaire, but the second part is best investigated by unstructured and in-depth interviewing. Thus, the use of mixed/multiple methods approach enhances the research possibilities within the framework of a study.
- **Better for more complex situations.** Another important advantage of a mixed methods approach is that it provides freedom to use the best methods, irrespective of their paradigm, in more complex situations. We

are often confronted with situations with complex structure and dimensions that warrant investigation by multiple methods not only within a paradigm but also across paradigms. A mixed/multiple methods approach provides such freedom and flexibility. According to Creswell and Clark (2011: 21), 'the complexity of our research problems call for answers beyond simple numbers in a quantitative sense or words in a qualitative sense. A combination of both forms of data provides the most complete analysis of problems.'

- **Enrichment of data.** There are situations when you collect data with one method but for its supplementation or enrichment you need another set of data. The second set of data primarily looks at the issues from a different perspective. This triangulation enriches the information and enhances the accuracy of the findings and is only possible when a mixed/multiple methods approach is used in undertaking a study. Let us take another example (Figure 1.5), in which the author was involved, that used non-participant observation as a method of data collection but with the recording done, on the spot, in two different formats (descriptive and categorical). Though the data was collected by one method, two different methods of observation recording were employed. Some of the subsequent steps – the analysis and communication of the findings – were treated in two different ways appropriate to the manner in which the data was collected. This enrichment of data was possible only because of the use of mixed methods in recording and subsequent steps that followed.
- **Collecting additional research evidence.** For complex and important situations, where you want further evidence to support or contradict your argument, collection of data by two different methods makes good sense. The second set is used for comparison and confirmation or contradiction of the findings of the first method.

Triangulation: Triangulation involves the use of the same set of data from multiple sources to best achieve the objectives of your study. It is based upon the belief that use of the same set of data, collected through different approaches to draw conclusions, and its examination from different perspectives will provide a better understanding of a problem, situation, phenomenon or issue. There are different types of triangulations; data, investigator, theory and methodology.

The author was involved in a study designed to develop a service delivery model for maternal and child health services for rural India. To work out the worker–population ratio, data was collected through a 'two-minute-instantaneous' non-participant observation of the activities being carried out by service delivery workers, on randomly selected days, over four years, taking into consideration the periods of fluctuations in the workload due to seasonality. Different categories of health workers, when delivering services in real-life situations, were observed by an observer every two minutes and their activities were recorded in descriptive as well as predetermined service-activity categories (developed on the basis of pre-test phase) by the observers. Information gathered through descriptive recording was thematically analysed to ascertain the activities carried out by the workers and amount of time spent on each one of them. The data gathered through categorical recording was similarly analysed to establish the time spent on each activity. The two sets of data were compared (triangulated) to ascertain the various activities carried out by the workers and the average time spent on each one of them to form the basis of establishing the optimal worker–population ratio for the service delivery model.

Figure 1.5 Mixed/multiple methods study – an example

Some of the disadvantages are as follows:

- **More data means more work and resources.** Collecting data through two or more methods means more data to collect and analyse, resulting in more time, financial resources, effort and technical expertise. Instead of one data set you have at least two data sets to handle for data collection, analysis, processing and information dissemination.
- **Requires additional and diverse skills.** As multi-methods studies use different methods belonging to both quantitative and/or qualitative paradigms, you need to be reasonably well versed in all those methods and procedures that you are likely to use, requiring a wider skill set than for single-method studies. You need to have knowledge and skills in data collection methods that you are proposing to use. Similarly, you need to be competent in data analysis methods suitable for different methods of data collection. Finally, you need to be well versed in data triangulation and information dissemination for different sets of data.
- **Contacting two study populations.** Using a mixed methods design may involve contacting and establishing rapport with two or more different study populations, with all that that entails.
- **Resolving disagreements in data.** You may discover a significant disagreement between the data sets. How do you decide as to the reliability of a set of data?

Considerations to be kept in mind

You need to keep in mind a number of things when using a mixed methods approach:

- Make sure you have sufficient time to complete the additional tasks. Using different methodologies means more work for the whole research project.
- You also need to be sure that you have the required technical expertise to develop and/or undertake different methods and procedures.
- You need to decide how to resolve inconsistencies, if encountered, in the findings.
- How will the findings of different methods be communicated? Will they be triangulated, integrated or communicated in a parallel manner?

Situations in which the approach can be used

A number of reasons justify the use of mixed/multiple methods approaches in social research. To illustrate we will take some examples. The overriding reason for using the mixed/multiple methods approach is the desire to enhance the coverage, depth, reliability and validation of your findings through the use of another method(s). Specifically, multiple methods can be used in the following situations: