6

Initiating social research

This chapter

- **describes how the research process begins**
- **defines the tasks required at this step of research**
- **introduces operationalization of concepts and triangulation**
- **explains this process in both quantitative and qualitative research**
- **clarifies the nature and role of hypotheses in social research.**

Key headings

Introduction

In the previous chapter it was shown that the research process proceeds through a number of steps, beginning with the identification of the research topic, and moving through the process, until data collection, analysis and processing are completed. In this sense, the steps have a specific purpose, are assigned certain tasks, and can be addressed as prescribed.

In this chapter, we shall address the first step of the research design, focusing on the individual tasks that are assigned to it. Particular emphasis will be given to the many ways in which the research topic is prepared so as the researcher can study it successfully and

in detail. Associated with this is the question of methodology, which has to be selected at this point.

We begin our discussion with the first step of the research process, and more particularly with the selection of the research topic.

1 Selection of the research question

One of the first issues the investigator has to make clear and specific is the focus of the research. This implies the identification first of the research question, and second of the methodological framework within which the topic will be studied. Simply put, the researcher has to answer very clearly the questions: 'WHAT will be studied in this project?' and 'HOW will this be studied?' Although the latter is a very complex question, it is important to know at least whether the study will be qualitative or quantitative.

Research theory and practice (see Pfeifer, 2000; Puris, 1995) concur that there are at least three major issues associated with the selection of the research topic that deserve attention. First, what can be studied in a research project? Second, who selects the research topic? Third, what factors influence the decision to study a certain research question? These points will be addressed briefly next.

1.1 The nature of the research question: 'What can be studied?'

In practice, social scientists can investigate virtually any social issue. The research topic can be related to people, groups, ideas, ideologies, attitudes and opinions, structures and processes, methods and practices, and the causes and effects of social events. Units of study can be taken from any level, that is, from the individual-to-individual level, individual-to-group level, or group-to-group level. A research project can operate at one or more levels.

The only restrictions on this freedom relate to issues of relevance, researchability, feasibility and ethics. *Relevance* refers to whether the study of the research topic is relevant to the purpose of the study. *Researchability* refers to whether the research topic is approachable methodologically. Topics that do not lend themselves to methodological scrutiny, such as whether there is a God or whether there is life after death, cannot be studied empirically. While research can approach the perceptions people have of God or life after death, a direct empirical study of these issues is not possible. *Feasibility* relates to whether the research is possible, that is, whether the researcher has access to the research subject as well as the means and resources that are required to complete the study. *Ethics*, finally, refers to whether the proposed study is ethically justifiable and whether it follows ethical standards and principles in its design, execution and the application of the findings.

Any topic that is relevant, researchable, feasible and ethical can be studied. However, it should be noted that of these four factors only the second and third are directly relevant to the question: 'What can be studied?' Obviously topics that are not relevant or are not based on ethical standards can still be studied. There are two levels of rules regarding what researchers should study: one relates to what researchers *can* study, and the other refers to what researchers *should* study. Both sets of rules are important.

1.2 Who chooses the research question?

There are many answers to the question 'who chooses the research question'. The three most common answers are introduced next.

1 *The researcher*. It is generally taken for granted that the right to choose the research topic rests with the investigators, who generally study issues that lie within the area of their personal expertise and interests. These interests are related (a) to external factors, such as income, prestige or promotion, advancement of knowledge or improvement of social conditions (extrinsic motivation); or (b) to internal factors, such as commitment to the research issue per se (intrinsic motivation).
2 *Social conditions*. Here, it is argued that the researcher is a part of the community, has a public responsibility and duty to serve the society, and that research is guided by social conditions, namely the needs of that community. Hence, researchers select an issue that requires serious attention, even if this is not their primary choice of research.
3 *The sponsor*. Complex and demanding research topics are usually funded by sponsors who not only provide the resources, but also determine the area of study and the research topic. Many researchers work for specific employers, who in turn determine the research topic. Contract research will also have limited freedom of choice.

There are obviously many other factors that have an impact on the choice of the research questions. A number of such factors are listed in Box 6.1 (see Pfeifer, 2000; Puris, 1995).

Box 6.1

Factors affecting the choice of the research topic

- *Financial constraints*. Topics funded by sponsors are more likely to be studied than those that receive no support.
- *Time*. Studies that take up too much time are less likely to be chosen by researchers than others that are equally important but require less research time.
- *Availability of assistants and experts*. Lack of research assistants may force researchers to opt for topics that can be studied without their help.
- *Research paradigm*. Topics studied within popular paradigms (e.g. feminist research) may be preferred to topics investigated within other paradigms.
- *Expertise*. Researchers normally study topics that are within their professional interest and expertise.
- *Ideology*. Researchers study issues that are consistent with their ideological affiliation. Feminists study women, and Marxists study the status of workers in capitalist societies.
- *Access to the research subject*. Issues that are difficult to access are less popular research topics than those that are easily accessible.
- *The need for data*. The need for information on certain subjects attracts the interest of researchers not only through their own volition but also because these issues attract funds, and hence assistants and other resources.

1.3 Basic questions

After the research topic has been chosen, the investigator usually explores further methodological issues related to the researchability of the topic and related factors. The extent of such an exploration depends on factors related to the nature of the topic; however, some questions are thought to be particularly important in this context (see Pfeifer, 2000; Puris, 1995). Examples of such questions are given below.

- *What is the research unit?* Before embarking on the next stage, the researcher should know exactly what the research unit of the study will be. 'Research units' are quite often defined very differently; thus the researcher should make it clear at the outset that the research will deal with a certain unit, in a certain context, and having certain characteristics. It is important to stress that this is the unit the investigator will refer to when conclusions, statements or generalizations are made.
- *What is the level of research?* Research can be conducted at several levels, for example:
  - first-level research, that is, the relation between individuals
  - second-level research, that is, the relation between individuals and groups
  - third-level research, that is, the relations between groups.

  An investigation may be carried out at more than one level. It is the task of the researcher to define these levels adequately during the first step of the research design.
- *Will objectivity be observed?* The attitude of the researcher to objectivity should be made clear at the outset. If objectivity is to be observed, and if measures to ensure objectivity have been taken, these should be stated. If objectivity is considered irrelevant, this should be made known. Researchers must state clearly whether they take the role of a 'detached observer', an 'empathetic observer', a 'faithful reporter', a 'mediator of languages', a 'reflective partner' or a 'dialogic facilitator'. Each role entails a different degree of objectivity.
- *Will ethical issues be considered?* Ethical issues should be considered at all stages of the research design, and measures taken to guarantee that the respondents will not be adversely affected in any way by the research or the publication of the findings. At this stage, there are several ethical questions that are extremely relevant, for instance those listed in Box 6.2.

When all questions have been answered satisfactorily, the researcher will proceed to the next step.

Box 6.2

Ethical considerations when choosing a research topic

- Can this topic be addressed without violating ethical standards?
- Can confidentiality and anonymity be guaranteed?
- Can it be ensured that the study of this topic will not endanger the respondents and their families?
- Can this study hurt the researcher?

- Can it be ensured that all members of the research team will adhere to ethical standards?
- Will the study of this topic necessitate any type of unfair dealing, illegal or unethical activity?
- Can the research arouse outside interest (e.g. from the authorities) that could harm the participants?
- Is it likely that ethics approval from the proper authorities will be obtained?

(Benini, 2000: 27–8)

2 Selection of the research methodology

2.1 Introduction

The manner in which research will proceed depends on many factors, but the underlying methodology is the most important. For this reason, it is imperative that at this stage the researcher defines and outlines clearly the type of methodology that will guide the research project. In some cases just stating that the investigation will be based on a quantitative or qualitative framework might suffice. In other cases more information may be required.

This is for instance the case when researchers need to state the paradigm that guides their theory and ideology. Such extra information would be required, for example, where the research adopts a Marxist, feminist or symbolic interactionist approach. Explaining the theoretical and ideological basis of the project offers a better understanding of the research, provides a clear and sound basis for developing the research design, and allows a fair and valid interpretation and assessment of the findings.

Whether the methodological framework will be quantitative or qualitative, whether the orientation of the framework will be critical, empowering or descriptive, and whether the definition of the framework will be general or specific and detailed depends on many factors. Some of these are related to the research object and others to the theoretical perspective that guides the thinking and operation of the researcher. We already know that any decision is acceptable and legitimate if it is justified in terms of methodological standards, and in this sense there is no right or wrong methodological framework.

Box 6.3

Factors guiding the choice of a methodology:

- the underlying theoretical paradigm
- the appropriateness of the method for the theoretical goals
- the adequacy of the method for the research object
- the overall purpose of the project
- the nature of the expected outcomes
- the realization of methodological rules which determine its structure, possibilities and limitations
- examination of the prerequisites and conditions that must be considered when performing mathematical-statistical tests.

2.2 Criteria of choice

It has already been shown that social research can be conducted within a quantitative or qualitative context, and that both types of research are equally legitimate. Hence, when we are talking about the choice of methodology, the question is not about its *quality* but about its *suitability*.

Normally, although ideology plays an important role, the choice of a suitable methodology is directed by theoretical principles. This issue has been addressed by social scientists and methodologists alike, who have taken positions on this issue and have produced sets of criteria to guide their choice. Berger et al. (1989: 152) argue that the choice of methodology is usually influenced by factors such as those listed in Box 6.3.

In general, the conditions under which a quantitative methodology is employed are very clear. Its nature and the homogeneity of its approach leave no doubt as to when this research model is to be employed. In brief, that is when the project is interested in:

- observable phenomena
- quantification and measurement
- objectivity
- large samples
- validity and reliability
- description, relationships and causality
- statistics as a tool of data analysis
- representativeness and generalizability
- replication, precision and accuracy.

Likewise, qualitative methodology is employed when researchers seek to understand how people make sense of their environment and the factors and conditions that shape their lives (Bogdan and Bilkin, 1992; Drew et al., 1996: 162). More specifically, Flick and associates (1991) relate the choice of qualitative methodology to factors such as those listed in Box 6.4.

Box 6.4

Factors in favour of a qualitative methodology

A qualitative methodology is employed when:

- The standard of knowledge in the area of the research subject is inadequate and provides no sound basis for a quantitative study. The qualitative research in this case takes the form of an exploratory study.
- There is a need to study reality from the inside, that is, to understand it from the point of view of the subject.
- The study object is so complex that a quantitative method is of little use (Kleining, 1991).
- There is a need to capture reality 'as it is', that is, in interaction.
- The researcher intends to present the information gathered, not as numbers or formulae but verbally, in a detailed and complete form.

- The researcher wishes to approach reality without preconceived ideas or preconstructed designs and patterns.
- The investigator perceives researcher and researched as elements of the same situation and the research design as a whole unit.
- The researcher wishes to capture the meaning and regularities of social action.

In conclusion, regardless of the reason for opting for one or the other methodology, at this stage of the project, the researcher is expected to make a decision as to which methodology will guide the study, and why this decision was taken.

3 Methodological construction of the research topic

Following the choice of methodology, and having already decided about the research topic, the researcher will focus on the research question and work to refine and adjust it so that it can be approached methodologically. In some cases this 'refinement' and 'adjustment' is very simple or even not necessary at all. This is the case, for instance, in flexible qualitative design, where definitions are usually formulated fully during the research. In other cases, for instance in quantitative research, this can be very complex. More particularly, in quantitative research additional information is gathered (a) to further clarify the object of study; (b) to refine the research question, making it more specific and preparing it for investigation; (c) to develop a framework for the research project; and (d) to link the research question with research methods and procedures. Beyond this, when constructing the research topic the following tasks are to be considered:

- definition of the topic and associated variables
- exploration
- operationalization
- formulation of hypotheses.

It must be noted that, while quantitative researchers usually consider all four tasks in their research, in qualitative research, researchers take differing views on this. For some, these tasks are not to be constructed at the outset but to be developed during the research. For others, the design should be flexible and not commit them in advance. For most, operationalization is inconsistent with the essence of qualitative methodology.

4 Definition of the topic

The first point to be considered at this stage is the definition of the topic and of the related variables. The nature of definition depends on a number of factors, of which the type of methodology is important. Quantitative researchers usually define the topic accurately and specifically; qualitative researchers prefer to define it loosely and in general terms.

However, both will define their topic in a way that makes it clear, explicit and distinguishable from other objects, and so makes the study possible.

For example, if the research question is about 'Family and delinquency', quantitative researchers are expected to explain what they mean by both 'family' and 'delinquency', and define these concepts accurately. In doing so, the researcher will not necessarily develop a new definition for each concept, since there are many well-accepted definitions available for both concepts. However, since there are many types of families and of delinquency, researchers will specify the kind of issues they intend to investigate.

For instance, whether they will study: (a) one-parent families, *de facto* families, homosexual families, reconstituted families, extended families, ethnic families, city families or country families; (b) families with many children, a few children, or no children; (c) families with parents (and children) of all ages or of specific age groups; (d) lower class, middle class or upper class families, and so on.

When defining the topic, researchers will reduce it significantly. They may, for instance, reduce the concept 'family' into 'families in which at least one spouse is over 25 years of age', 'families with children under 5 years of age', or 'families with teenage children'. Quite frequently, researchers begin their definition with the statement that 'for the purpose of this study family is defined as ...' and then describe the type of unit they intend to deal with in their study. In a similar fashion, the researcher will define 'delinquency'. These definitions are expected to be specific enough to enable the researcher and the respondent to differentiate between the issues in question and other matters that are excluded from the study.

As stated earlier, especially with regard to quantitative studies, defining the topic makes it concrete and specific and more understandable, and through doing this the study is 'prepared' for an effective methodological operation to follow. The topic in the previous example, 'Family and delinquency', might read, after definition: 'Children of working-class families and delinquency rate (property crimes)'. At this stage in the research design, both concepts (family and delinquency) are clearly defined, and have become concrete and specific.

The process of defining the research question is predominant in quantitative research. In qualitative investigations, definitions are loosely structured; it is expected that additional information will be collected during the study and will help to refine concepts and define them more clearly in a more concrete and specific manner. The more information is gathered and the more respondents are included in the study, the clearer the definitions become. It must be kept in mind that qualitative researchers are interested in people's interpretations of objects and events, and this includes their definitions.

5 Exploration

5.1 Introduction

Some exploratory work is undertaken in any study, irrespective of its methodological framework and its purpose. In some cases this work is elementary, and serves as a guide

for the formulation of hypotheses and/or for the operationalization of the concepts. In other cases, exploration is a major part of the research study. The latter is, for instance, the case in certain forms of qualitative research.

Exploratory studies are most frequently carried out when there is insufficient information about the research topic, so that the formulation of hypotheses and the operationalization of the question are difficult or even impossible. More specifically exploration is undertaken for reasons (see Becker, 1989; Puris, 1995) such as those given in Box 6.5.

Box 6.5

What is exploration for?

- *Feasibility*. Exploration will show whether a study of the issue in question is warranted, worthwhile and feasible.
- *Familiarization*. Exploration will familiarize the researcher with the social context of the research topic, with details about relationships, values, standards and factors related to it, and with methods.
- *New ideas*. An exploratory study may help to generate ideas, views and opinions about the research object, which are useful when constructing the research design.
- *Formulation of hypotheses*. Exploration will show whether variables can be related to each other, and if so in what way, direction and degree.
- *Operationalization*. Exploration can help to operationalize concepts, by explaining their structure and by identifying indicators.

5.2 Types of exploratory studies

Exploratory studies can take many forms, depending on the nature of the main study, the purpose of the research, the study object, the state of knowledge in the area of investigation and, more specifically, the purpose of exploration. As a prelude to a quantitative study, exploration is usually found to take one or more of the following forms (Vlahos, 1984):

- review of available literature
- expert surveys
- analysis of case studies.

Most projects employ more than one type of exploratory study, with literature research being predominant. This also constitutes the first step of exploration, when more types of exploration are employed. Library research or literature review will determine whether additional exploration is required and, if so, what type of exploration will be necessary.

- *Expert surveys*. Expert surveys involve interviews with experts who have substantial knowledge and experience in the research area, although their views might not have been published. This unpublished information is often very relevant to the research object, and can only be obtained through such interviews.

- *Case studies*. If information collected through literature review and expert surveys is insufficient, researchers collect first-hand information through case-study research. Single cases relevant to the issue are selected and studied, in order to collect information for the main study.

It must be noted that case studies, as a concept, can be a research design as well as a method of data collection. The former is more appropriate for qualitative studies; the latter is mostly used as a prelude to quantitative research in the context of exploration. Both types of case-study research will be discussed later.

5.3 Literature review

Literature review involves a secondary analysis of available information already published in some form. It can focus on the research object alone, with the aim of collecting information about its structure, process and relationships, thus increasing the familiarity of the researcher with the research object, but it can also focus on methodological issues pertaining to the approach to the research topic.

In addition, it can consider previous research, to link it with the study currently planned. It may also be geared towards a historical or comparative analysis of the issue in question so that the current study can be placed in a historical context. Finally, it may review a theory or the methods and techniques most suitable for the study, simply by looking at the ways other researchers have approached the topic, and by evaluating their suitability and effectiveness.

Literature review is the most fundamental type of exploration employed by researchers in the social sciences. The reason for this is that literature review combines *search for information* with *critical assessment,* whereby appropriate resources are sought, digressing from one source to another and the findings subjected to critical evaluation, before moving to the next step. As Cooper (1998) put it, literature review 'seeks to describe, summarise, evaluate, clarify and/or integrate the content of primary reports'.

Briefly, literature review can be seen as a secondary analysis and a critical appreciation of previous research findings. In this sense, literature review entails seven major steps:

1 Identification of the exploration topic.
2 Searching for relevant literature.
3 Data collection.
4 Exploration and critical analysis of the collected data.
5 Evaluation of the findings.
6 Drawing conclusions about the value and significance of the findings for the planned study.
7 Making the results public for further discussion.

Although the steps of literature review constitute the guiding path of this procedure, in real practice, the reason for using this procedure varies, depending on the focus of the researcher. A detailed list of the ways in which literature review is thought by many writers

on the subject to assist researchers is shown below (e.g. Bourner, 1996; Cooper, 1988; Hart, 1998). It is argued that literature review helps researchers to:

- gain an overview of the knowledge and impressions of researchers on the research topic
- discover whether research on the same topic has been conducted
- find out aspects of the research topic not considered in the previous literature
- check the effectiveness of the methods chosen to address the research topic
- test the validity and credibility of existing resources and their conclusions
- gather valuable knowledge that could serve as the foundations of the new project
- look for research procedures that could guide the research more successfully
- gain a picture of the extent and nature of previous studies on the research project
- search for other studies on the same project and learn from their experiences
- identify eventual research problems and find ways of dealing with them
- gather information that would enable the researcher to construct the epistemological basis of the project.

Traditionally, literature review has been conducted in a library; this is the reason for having been known in the past as a 'library search'. Nevertheless, the advent of the Internet and the formation of electronic databases have moved the focus of review from 'library' to 'virtual library'. This has not only expanded the boundaries beyond local libraries but also made the search fast and easy. With a computer and access to the Internet, researchers can now access sources from all parts of the world, without leaving their home or office. All that is required is to visit a database and search for information. Search engines make this procedure quick, reliable and easy. A few examples of searching tools and accessible databases are shown below.

- **ASSDA**: *Australian Social Science Data Archives,* available at: http://www.library.qut.edu.au/find/databases/fullrecord.jsp?id=5251
- **BHI**: *British Humanities Index,* available at: http://www.proquest.co.uk/en-UK/catalogs/databases/detail/bhi-set-c.shtml
- **ERIC**: *Education Researches Information Centre,* available at: http://www.eric.ed.gov/
- **Google Scholar**, available at: http://scholar.google.com
- **COPAC**, available at: http://www.copac.ac.uk
- **HII**: *Humanities International Index,* available at: http://www.ebscohost.com/academic/humanities-international-index
- **SSCI**: *Social Sciences Citation Index*, available at: http://wok.mimas.ac.uk/
- **Scopus**, available at: http://scopus.com/scopus/home.url

It must be noted that the literature review, as described above, is employed equally by researchers preparing their research project, as well as by writers who are interested in assessing the nature and quality of previous research on a social issue, and finally by students who are interested in literature of the past as the basis of their assignments and

more so in their postgraduate research and thesis. The purpose of their review may be different but the procedure of dealing with previous publications is similar, if not the same.

6 Operationalization

6.1 Operationalization in quantitative research

Often, even the best definitions do not prepare concepts clearly enough to make further research possible. Using definitions in research can be misleading and cause confusion, bias and distortions. Try, for instance, to investigate with some degree of objectivity, certainty and accuracy concepts such as love, patriotism, morale, oppression, ambition, pride, motivation, esteem, joy, anxiety, temperament and learning ability without explaining them in more detail. Even concepts such as social class are difficult to use directly in research because they incorporate many elements (Ellis, 1993), and can therefore be understood and interpreted differently by the respondents. Asking people straight questions about which social class they belong to is found to produce biased and inaccurate answers, with a large proportion of respondents ranking themselves as middle class.

Box 6.6

What is operationalization?

Operationalization is the process of converting concepts into their empirical referents, or of quantifying concepts for the purpose of measuring their values, such as occurrence, strength and frequency. It is employed when concepts are vague, unclear or abstract, and thus involves a process of translating abstract concepts into synonymous empirical referents; in this way it makes measurement possible, clear and precise.

The fact is that concepts are complex and diverse. Some entail one dimension, others are multi-dimensional. Some (e.g. gender, weight, height, age, distance) are directly observable, and their empirical reference obvious and easy to ascertain. Others (e.g. intelligence, ethnicity, class, alienation, norms, cohesion, values) are not empirically observable, and their empirical reference is neither obvious nor easy to establish.

When concepts are complex and hence difficult to describe (often referred to as constructs), researchers use *indicators,* i.e. directly observable and accessible dimensions, to allow access to the unknown concepts. For instance, if the concept is 'intelligence' the indicators are 'IQ scores'. More specifically, indicators are observable characteristics or empirical equivalents (e.g. IQ scores) to the concepts they represent (intelligence), and make measurement not only possible but also valid (Laatz,1993). Hence, instead of focusing on the concept we focus on the indicators. The process of identifying the indicators is called *operationalization* (see Box 6.6 and 6.7), which is based on principles developed in the nineteenth century.

Box 6.7

Major elements of operationalization

- Identification of dimensions that reflect the nature and complexity of the concept. Dimensions refer to aspects of the concept.
- Selection of indicators that reflect the presence/absence and strength of the dimensions of the concept.
- Identification of empirical referents, that is, of the range of values the indicators can assume, and assignment of scores that represent the degree of presence or absence of the concept or variable.
- Quantification of the variable, that is, identification of the continuum of values the variables can assume, and assignment of scores as above – here, for the main variable.

The central concepts that characterize operationalization are *measurement*, *dimensions*, *indicators, measures, sampling* and *design* (Laatz, 1993). In simple terms, operationalization contains four major elements: (a) identifying the dimensions of the concept, (b) selecting indicators, (c) identifying empirical referents, and (d) quantifying the variable (see Box 6.7). The process of operationalization is simple and straightforward, and can be displayed graphically as shown in Figure 6.1.

6.2 Examples of operationalization

Using the concept 'social class' as an example, operationalization will proceed as follows:

- identifying the *central dimensions* of the concept (e.g. economic, occupational and educational status)
- choosing the *indicators* of the concept's dimensions (e.g. income, occupation and education)

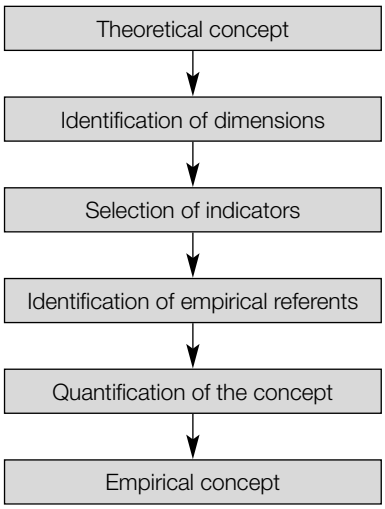

Figure 6.1 The process of operationalization

- identifying the *empirical referents* (e.g. amount of money per year, type of job and years of study) and
- quantifying the concept (e.g. establishing, as a result of the estimation of the value of the indicators, what constitutes a upper, middle and lower social class).

In this sense, the researcher who investigates the distribution of people within the class system of their community will not ask the respondents directly about which class they think they belong to, but rather about (a) the amount of money they earn, (b) the type of job they have and (c) the years of study they completed. Indicators and referents serve here as a bridge between theoretical and empirical concepts. This is not only easier for the respondents to answer; it offers also more accurate and more valid responses.

Box 6.8

Operationalizing social class

Concept →	Dimensions	Indicators	Empirical referents
Social class →	1. Economic status	1. Income	1. Amount of money
	2. Occupational status	2. Occupation	2. Type of job
	3. Educational status	3. Education	3. Years of formal study

Let us now apply this in another example. A researcher wishes to measure the degree of religiosity of politicians in the United Kingdom. The dimensions used are 'belief' and 'practice'. This as well as the indicators, the empirical referents and the other elements of operationalization are shown in Figure 6.2, in more detail. The final religiosity score will indicate the religiosity level of the respondent, namely whether he is very religious, religious, not very religious, or not religious at all.

6.3 Basic questions in operationalization

As noted above, the basic questions that need to be addressed during the process of operationalization are:

- What is the concept to be studied?
- What are the dimensions that need to be addressed?
- What are the most appropriate indicators that describe each dimension fully?
- Does operationalization measure what it is supposed to measure?
- Are the instruments of measurement reliable?

Apart from attempting to establish clarity and precision, these questions encourage the researcher to check the validity and reliability of operationalization.

6.4 Rules of operationalization

The basic rules of operationalisation are associated with the selection and quantification of the empirical referents, and are as follows:

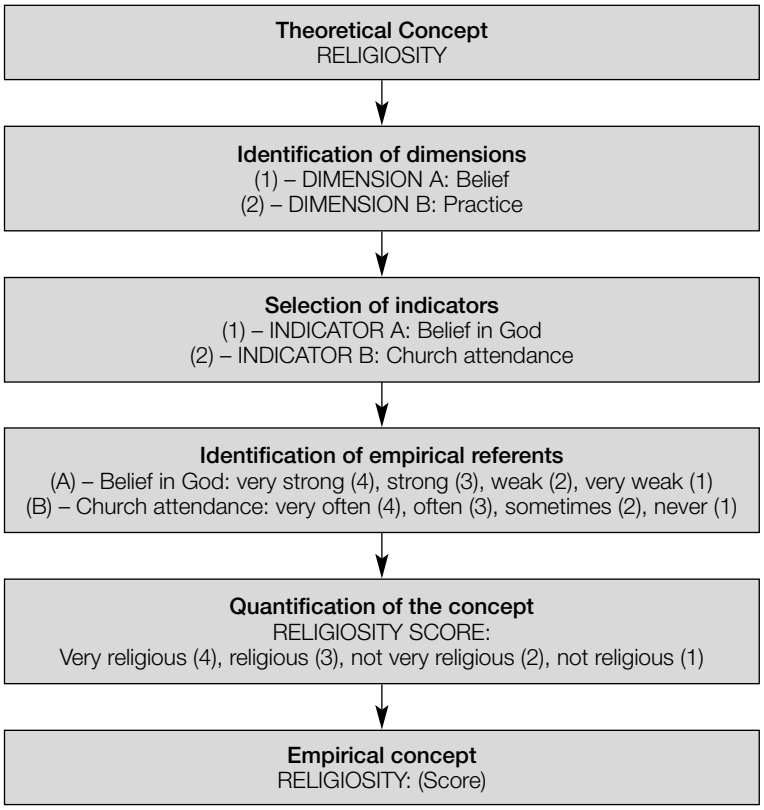

Figure 6.2 The process of operationalization – An example

- *The rule of empirical relevance*. Indicators should adequately reflect the concept they are intended to measure. Indicators should be synonymous with the concept.
- *The rule of correspondence*. Indicators should correspond fully with the concept, and only one concept, and should be exhaustive and mutually exclusive.
- *The rule of empirical adequacy*. Indicators should have the capacity to measure all aspects of the concept adequately, with each one addressing one dimension only.
- *The rule of quantification*. Uniform quantification procedures should be employed.

In most cases, the transition from the concept to the indicators is simple and direct. Age, gender, religion and ethnicity are a few examples. Educational achievement and sociability are additional examples. In the former the indicators will be scores achieved in the central areas of study; in a primary school environment, this may perhaps be the grades in English, maths and science. For the latter, indicators may include number of friends, number of visits received from friends, club membership and similar items.

6.5 Choosing indicators

Dimensions and indicators are selected in many ways. In some cases they are chosen by means of theoretical principles, in other cases through speculation. In both cases it is assumed that a relationship between concepts and their empirical equivalents exists. Experience is another source of indicators. Analysis of real definitions is yet another. However, the most secure way of choosing indicators is to use exploratory studies, especially case-study analysis based on primary experience with respondents. For instance, if a researcher wished to study class status in a small rural community, and to select the relevant indicators, a qualitative study of a small part of the population would be most appropriate. This study would focus on what people thought constituted 'social class', and what in their view assigned members of the community a high or a low rank in the class context.

6.6 Operationalization in qualitative research

Qualitative researchers do not employ operationalization. Instead, when there is a need to create such concepts, sensitizing concepts are used. The general view of operationalization is that it is an inadequate research instrument; many researchers point to a number of deficiencies. Most critics of operationalization (see Lamnek, 1993, 1995) address the following deficiencies:

- *Inadequacy*. Operationalization is often based on common sense, and therefore it links concepts not with reality but with other concepts, leaving reality untouched. Operationalization is considered an inadequate way of approaching reality.

Box 6.9

Operationalization: an example

Assume we are to study the class structure in a small country town. The intention of the study is to ascertain whether the community is divided into classes, and if so how the various classes compare with each other, using quantitative methods. How do we address 'class' in this town? To answer this question we proceed as shown below.

1. *Identification of dimensions.* A review of literature related to class in the region reveals that class entails at least three major dimensions: the *economic*, *occupational* and *educational* status. A combination of these dimensions is considered to constitute a person's position in the class system.
2. *Selection of the indicators.* Next we search for indicators: criteria that reflect the presence and extent of each of these dimensions. Examples of such indicators commonly employed by researchers in this context are *income* for economic status, *years of education* for educational status, and *type of occupation* for occupational status. Hence, measurement in this case will focus on these indicators.
3. *Identification of empirical referents.* The next task is to identify criteria that will allow us to quantify the indicators and so allow measurement and comparisons. These criteria are the referents. This means that the indicators will be translated into their empirical equivalents (referents). The obvious referent for income is money; the referent for education is 'years of study'; and for occupation it is the score assigned to the various occupation groups. (Such scores are readily available.)

Following this, income will be divided into nine groups, each with a fixed amount and together covering the range of income earned by respondents; similarly nine occupation groups will be established according to the status assigned to jobs, and educational groups will be constructed according to the years of study completed by each respondent. Each indicator will then be ranked from very low, through moderate, to very high, and numerical values will be assigned to each of the groups, ranging from 0 to 9. The pattern of quantification will be held uniform for all indicators. We shall see later that each indicator will be translated into a number of questions, and each question will provide the required information for the quantification expressed in general or average scores. If a respondent obtained, for instance, the scores 6, 4 and 3 for the indicators of class, this person would have obtained an average class score of 4.3.

4 *Quantification of the variable*. The procedure employed in the previous step will also be employed to quantify 'class'. Its continuum may be divided into the following nine groups: lower low, middle low, upper low class; lower middle, middle middle, upper middle class; and lower upper, middle upper, and upper upper class. Each group will be ranked from low (score = 1) to high (score = 9). The scores 1–3 will indicate low class, 4–6 middle class and 7–9 upper class. In our example, the class score of 4.3 will indicate a lower-middle class position.

- *Incompleteness*. Operationalization does not and cannot cover all aspects of the concept in question just by using existing knowledge. If sufficient knowledge about the concept was available, there would be no need for research. Thus, operationalization can only cover some aspects of the concept.
- *Subjectivity*. The structure of operational definitions often depends on the personal understanding of the researcher. For this reason the same concept can be operationalized in many different ways by various researchers. Such forms of operationalization may be of little use.
- *Concept and scores*. Quite often, concepts are taken to be equivalent to the scores of tests arrived at through operationalization (e.g. IQ scores and intelligence), an assumption that is not always true.
- *Timing*. First, operationalization is completed before the research has started. For this reason, instead of explaining and enriching the concepts in question, it reduces the options of the research and limits its scope. Second, concepts are not explored through the 'researched' but through the researcher, before the study is completed. Third, operationalization is conducted too early in the research process.
- *Validity*. These problems call into question the validity and reliability of the whole study.

This view is supported by many qualitative researchers. For some, the best form of operationalization is no operationalization at all. However, the views of qualitative researchers on this issue are not fully uniform. Beyond this, it is obvious that these criticisms come from a quantitative domain, and hence are bound to be negative.

6.7 Concluding remarks

For quantitative researchers operationalization is a powerful tool, fully supported by its paradigm, and almost always employed in a variety of ways and to a certain degree by nearly all researchers, wittingly or unwittingly. Still, its methodological significance should not be overestimated. One should remember that operationalization is valuable only if used properly, aiming to establish ideal structures and offer operational definitions that approximate the concepts included in the study. The results obtained through operationalization should finally be interpreted in the context of the indicators used.

7 Multiple operationalism: triangulation

7.1 Introduction and types of triangulation

Triangulation refers to the practice of employing several research tools within the same research design. Initially, triangulation was used to reflect what was known as *multiple operationalism* or *convergent validation*, and since it usually entailed three paths of action, it was named triangulation. This procedure allows the researcher to view a particular point in research from more than one perspective, and hence to enrich knowledge and/or test validity. Triangulation can be applied in all aspects of the research process. It can relate to the methods of data collection, the manner in which data are employed, the investigator, the critical stance and the theoretical perspective (Blaikie, 1988). The following are the most commonly used types of triangulation:

- *Method triangulation*. This combines several methods in the same study. It employs a mixed-method design to investigate different aspects of the same phenomenon (Crawford and Christensen, 1995). It can employ methods of different methodological affiliation (inter-method triangulation), or of the same methodological affiliation (see Denzin, 1989).
- *Time triangulation*. This method entails the use of research at different times, for example, surveying students during the first and last week of their first semester. This is known as *successive triangulation*, as against concurrent triangulation, where diverse methods study the same topic at one point in time. Examples of time triangulation are longitudinal studies, such as panel studies and trend studies. Mixed triangulation is possible when studies triangulate, say, methods and/or samples concurrently and consecutively (e.g. using multiple methods during the exploration and several samples in the main part of the trend study).
- *Paradigm triangulation*. Here a number of different paradigms (e.g. positivist and interpretive) are employed to study the same phenomenon. A qualitative study, for instance, may be employed in a manner that produces quantifiable data, and after data collection the data is quantified, analysed and interpreted within a quantitative perspective.
- *Investigator triangulation*. In this form, triangulation combines the expertise of more than one investigator in the same study (Flick, 2000c). This is a useful method in qual-

itative research where flexibility and openness are accepted. In quantitative research, investigator triangulation can be applied during the construction of the research design, especially during the interpretation of findings.

- *Sampling triangulation*. Here two or more samples are employed within the same project. Such triangulation is found in experiments when experimental and control groups are treated in a distinct manner that allows testing of causal relationships, often increasing the number of control groups to enhance the explanatory power of the instrument.

It goes without saying that these types of triangulation are not mutually exclusive. More than one form can be employed when required.

7.2 Purpose of triangulation

Triangulation is employed for a number of reasons. Using three methods, for instance, is thought (see Flick, 2000c; Burgess, 1984) to allow the researcher:

- to be thorough in addressing all possible aspects of the topic
- to increase the amount of research data, and hence increase knowledge
- to enrich the nature of research data
- to facilitate a study, where one procedure serves as a stepping-stone for the other
- to allow comparisons (e.g. in longitudinal studies)
- to achieve a higher degree of validity, credibility and research utility
- to overcome the deficiencies of single-method studies.

From a feminist stance, triangulation is thought to 'express the commitment to thoroughness, the desire to be open-ended and to take risks', as well as to 'increase the likelihood of obtaining scientific credibility and research utility' (Reinharz, 1992a: 197). Combining quantitative and qualitative research on the same topic allows a stereoscopic view of its structure and process, so avoiding the deficiencies of each of these models.

Box 6.10

Critique of triangulation

- Triangulation and single-method procedures alike can be useless if they are based on the wrong conditions and wrong research foundations.
- Triangulation can be used as a way of legitimizing personal views and interests.
- Triangulation is difficult to replicate.
- Triangulation per se is no more valuable than a single-method procedure, which can be more suitable, useful and meaningful to answer certain questions.
- Triangulation is not suitable for studying every social phenomenon.

(Lamnek, 1993: 245–57)

7.3 What is triangulation worth?

Although the use of triangulation is generally thought to produce more valid and reliable results than the use of single methods, there are researchers who see little – if any – value

in this research practice. Problems and conditions of triangulation have been discussed by many writers (e.g. Lamnek, 1993, 1995; Silverman, 1985: 105–6), who argue that expanding the spectrum of research does not necessarily guarantee better results.

In addition to problems emerging from the theoretical justification of triangulation and the positivistic bias it seems to entail, it is argued that there is no evidence to suggest that studies based on triangulation necessarily produce more valid results. Even if all the diverse methods support each other's findings, they might all be invalid. In simple terms, the findings of a study based on several methods are not necessarily 'better' than the findings of a single-method study. Finally, critics ask: What happens if multiple methods employed in the same study produce different findings? Which method is valid? Beyond this, if methods from different methodological contexts are employed, to what extent can their results be compared?

8 Formulation of hypotheses

8.1 Introduction

A hypothesis is an assumption about the status of events or about relations between variables. It is a tentative explanation of the research topic, a possible outcome of the research, or an educated guess about that outcome. For some methodologists any logically justifiable and testable assumption can be a hypothesis; for others such an assumption should be scientifically justifiable, and created on the basis of sufficient theoretical or empirical evidence. Hypotheses are opening answers to research questions and can be generated in many ways, such as through existing theories as well as through research findings, evidence, commonly held beliefs, or intuition. The purpose of hypotheses is to offer a clear framework and guide when collecting, analysing and interpreting the data. More specifically, hypotheses are expected:

- to guide the social research, by offering directions to its structure and operation
- to offer a provisional answer to the research question
- to facilitate statistical analysis of variables in the context of hypothesis testing.

In many cases hypotheses serve as a testing tool for the relationships between variables. In this sense, a hypothesis contains a possible solution to the research problem; its validity will be tested by the evidence gathered by the study. At the time of construction, hypotheses cannot be described as true or false; they can only be relevant or irrelevant to the research topic. If we were to study, for instance, the effects of education on religiosity, a relevant hypothesis could be: 'a high level of education is associated with low religiosity'; equally possible could be: 'education is conversely related to religiosity'; 'education is positively correlated with religiosity'; and 'there is no relationship between education and religiosity'. Every stance taken within the hypothesis is correct, as long as it is relevant to the purpose of testing.

Both quantitative and qualitative researchers employ hypotheses, although in different forms, at different research stages and for different purposes. While the former see hypotheses as a step towards research, the latter perceive hypotheses as emerging out of the research. In the following section we shall consider hypotheses as employed by quantitative researchers. The nature and construction of hypotheses in qualitative research will be discussed later.

8.2 Types of hypotheses

There are many forms and types of hypotheses, mainly depending on their structure, goals and nature. A few examples of types of hypotheses are described briefly below.

- *Working hypotheses*. A working hypothesis is a preliminary assumption about the research topic, most commonly made when there is not sufficient information available to establish a hypothesis, and as a step towards formulating the final research hypothesis.
- *Statistical hypotheses*. A statistical hypothesis is a statement or set of statements developed by means of statistical principles related to the probable distribution of certain criteria of the population. Statistical hypotheses are used as part of the process of verification, lend themselves to statistical testing, and are expressed in the context of a null hypothesis and an alternative hypothesis. Statistical testing should determine whether a statistical hypothesis is accepted or rejected.
- *Null hypotheses (H_o)*. This is one of a set of two hypotheses (the other is the alternative hypothesis) formulated by the researcher to be used in the context of hypothesis testing.
- *Alternative hypotheses*. This is the other of the set of two hypotheses referred to above (see 'null hypothesis'), and states the opposite of the null hypothesis. In statistical tests of null hypotheses, acceptance of H_o means rejection of the alternative hypothesis; and rejection of H_o means acceptance of the alternative hypothesis.

8.3 Criteria of hypothesis construction

Hypotheses can be presented in any form except that of a question. However, they have to meet a number of standards, which are listed below. While some methodologists are convinced that all these criteria should be met, others require that only a few of them are necessary. In general, hypotheses are required (Pfeifer, 2000) to:

- describe variables or establish a relationship between variables
- be empirically testable (capable of being proven right or wrong)
- focus on one issue only
- describe variables or relationships between variables
- be clear, specific and precise.

Hypotheses can be formulated in a *descriptive* or *relational* form; in the former they describe events, in the latter they establish relations between variables. They may also be

directional or *non-directional*, depending on whether or not they make a concrete suggestion about the research question. Whether hypotheses are formulated in one or other of the forms listed above depends very much on the nature of the study as well as on the manner in which hypotheses will be addressed.

Box 6.11

Types of hypotheses

Type of hypothesis	Example of hypothesis
Descriptive	'Many single parents live in poverty'
Relational	'Gender of single parents affects their quality of life'
Non-directional	'Marriage is associated with happiness'
Directional	'Married people are happier than unmarried people'

8.4 The trouble with hypotheses

Although hypotheses are used widely, their role in social research has been criticized on many grounds. Apart from the criticism that they make no positive contribution to the research process, it is argued that they bias the research design (e.g. data collection, data analysis and interpretation), restrict its scope, limit its approach, and hence predetermine the outcome of the research.

More specifically, it is argued that when hypotheses precede the research, they reflect previous 'knowledge' of what they are supposed to study, and this affects the researcher's perception of and action within the research project. The hypothesis in fact prescribes the path of research and the aspects that are to be considered in the investigation, and so sets blinkers and straightjackets on their operation. This is obviously contrary to qualitative principles that consider it imperative that researchers suspend previous knowledge in favour of openness regarding specific meanings and understandings of the subject in question (Meinefeld, 2000: 266).

Despite these criticisms, many investigators employ hypotheses in their research, implicitly or explicitly. It is argued in this context that:

- Hypothesis testing is employed when very specific aspects of relationships are tested.
- Hypotheses highlight existing aspects of the research topic on which the analysis is focused.
- In most cases hypotheses are based on information collected through previous research or exploratory studies.
- Previous knowledge is not necessarily detrimental to a study.
- The notion of suspending all previous knowledge and of openness is thought to be artificial if not impossible.

The last point is quite challenging; how can a well-trained researcher 'ignore' previous knowledge, especially about techniques of data collection and of research in general? After all, the purpose of science is to build on existing knowledge. Let us expand this point for a moment. Do qualitative researchers suspend their knowledge of methodology,

their academic maturity and ability to interpret, gained through long previous studies and experience in the area? Previous knowledge and expertise are highly valued and are expected to be acknowledged in the research report. It is not surprising that there are qualitative researchers who do not accept fully the idea of suspending previous knowledge. Moreover, not all qualitative researchers abstain from using hypotheses testing (Meinefeld, 1997; Hopf, 1996).

Main points

- Research initiation entails the selection of methodology, selection and definition of the research topic, the decision to conduct an exploratory study, operationalization and formulation of hypotheses.
- The step of research initiation is undertaken by all researchers, although qualitative researchers are less strict about detailed procedures than quantitative researchers.
- The research topic is usually chosen by the researcher but can also be determined by social circumstances or the sponsor.
- The choice of methodology is guided by the underlying theoretical paradigm and the nature of the research topic.
- The goals of exploratory studies are to explore the feasibility of a study, to familiarize the researcher with the research topic and the respondents, to bring new ideas to the research, and to facilitate operationalization and the formulation of hypotheses.
- Operationalization is the process of quantifying variables for the purpose of measuring their strength and frequency. It entails selection and quantification of indicators, and quantification of the variables.
- The rules of operationalization are the rule of empirical relevance, the rule of correspondence, the rule of empirical adequacy and the rule of quantification.
- Triangulation is the procedure in which data collection is accomplished through more than one avenue.
- A hypothesis is an assumption about the possible outcomes of the study. Hypotheses are expected to be clear, specific, precise and empirically testable, to describe one issue at a time, and not to contain statements that are contradictory.
- Qualitative researchers do not employ operationalization, and do not construct hypotheses prior to the commencement of the research.

Where to from here?

Before you leave this chapter, visit the companion website for the fourth edition of *Social Research* at http://www.palgrave.com/sociology/sarantakos4e to review the main concepts introduced in this chapter and to test yourself on the major issues discussed.

Further reading

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Online resources

http://www.odi.org.uk/resources/download/4525.pdf
http://citec.repec.org/cgi-bin/get_data.pl?h=RePEc:qeh:qehwps:qehwps66&o=getreflist
http://www.ruralhealth.utas.edu.au/gr/resources/docs/the-point-of-triangulation.pdf