Introduction to Research Methods

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Welcome note

Dear students,

In this part of this course, students will go through a research project from start to end. Students will have to form 4 to 6 member (no more, no less) groups at the beginning of the course. Ideally, the expected timeline of the course will be like this,

- Group formation: by the end of third/fourth week of the semester
- Topic selection and approval: End of October
- Prepare questionnaire and approval: End of November
- Data collection: by November
- Data analysis and preparing presentation: December
- Presentation: last lecture day

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1 What is research

When listening to the radio, watching the television or reading a daily newspaper it is difficult to avoid the term 'research'. The results of 'research' are all around us. A debate about the findings of a recent poll of people's opinions inevitably includes a discussion of 'research', normally referring to the way in which the data were collected. Politicians often justify their policy decisions on the basis of 'research'. Newspapers report the findings of research companies' surveys. Documentary programs tell us about 'research findings', and advertisers may highlight the 'results of research' to encourage you to buy a particular product or brand. However, we believe that what these examples really emphasizes is the wide range of meanings given to the term 'research' in everyday speech.

Walliman (2005) argues that many of these everyday uses of the term 'research' are not research in the true meaning of the word. As part of this, he highlights ways in which the term is used wrongly:

- just collecting facts or information with no clear purpose;
- reassembling and reordering facts or information without interpretation;
- as a term to get your product or idea noticed and respected.

The first of these highlights the fact that, although research often involves the collection of information, it is more than just reading a few books or articles, talking to a few people or asking people questions. While collecting data may be part of the research process, if it is not undertaken in a systematic way, on its own and, in particular, with a clear purpose, it will not be seen as research. The second of these is commonplace in many reports. Data are collected, perhaps from a variety of different sources, and then assembled in a single document with the sources of these data listed. However, there is no interpretation of the data collected. Again, while the assembly of data from a variety of sources may be part of the process of research, without interpretation it is not research. Finally, the term 'research' can be used to get an idea or product noticed by people and to suggest that people should have confidence in it. In such instances, when you ask for details of the research process, these are either unclear or not forthcoming. (See Saunders, Lewis, and Thornhill 2019)

In short, research is a diligent search, studious inquiry or investigation or experimentation aimed at the discovery of new facts and findings; or broadly, it may relate to any subject of inquiry with regard to collection of information, interpretation of facts, revision of existing theories or laws in the light of new facts or practical ideas. (See Adams, Khan, and Raeside 2014)

Based upon this brief discussion we can already see that research has a number of characteristics:

- Data are collected systematically.
- Data are interpreted systematically.
- There is a clear purpose: to find things out.

We can therefore define research as something that people undertake in order to find out things in a systematic way, thereby increasing their knowledge. Two phrases are important in this definition: 'systematic way' and 'to find out things'. 'Systematic' suggests that research is based on logical relationships and not just beliefs (Ghauri and Grønhaug (2002)). As part of this, your research will involve an explanation of the methods used to collect the data, will argue why the results obtained are meaningful, and will explain any limitations that are associated with them. 'To find out things' suggests there are a multiplicity of possible purposes for your research. These may include describing, explaining, understanding, criticizing and analyzing (Ghauri and Grønhaug (2002)). However, it also suggests that you have a clear purpose or set of 'things' that you want to find out, such as the answer to a question or number of questions (See Saunders, Lewis, and Thornhill 2019).

1.1 Research method vs. research methodology

A research method is a way of conducting and implementing research. The term 'methods' refers to specific activities (e.g. designing questionnaire, conducting interviews, focus groups, observation etc.). On the other hand, research methodology is the science and philosophy behind all research. It is more about our attitude to and our understanding of research and the strategy or approach you choose to answer research questions.

1.2 Why is research conducted

Research is conducted for a number of reasons, which in turn depend on the objectives of any particular 'research problem'. It may be to find out something we do not already know or to enhance our understanding of phenomena that we already know something about. In the business arena, however, research tends to be undertaken in order to achieve one or more of the following objectives (Adams, Khan, and Raeside 2014):

- To gain a competitive advantage
- To test new products and services
- To solve a management/organisational problem
- To provide information, which may help to avoid future business problems
- To forecast future sales
- To better understand shifts in consumer attitudes and tastes

- To enhance profitability
- To reduce operational costs
- To enable the management to priorities strategic options for the future etc.

1.3 Approaches to business and social research

Researchers usually handle numerous problems and apply research methods to obtain the best guess answers to their questions. They may use a single study or a combination of two designs. The investigator has to decide about the types and combinations of research forms that best serve the goals of the study. Broadly speaking, there are two main domains of research frequently observed in the literature, which are Quantitative research and Qualitative research. It is possible to combine quantitative and qualitative together to answer a single research question. Those approaches are known as mixed method research works. The diverse practices and uses of today's research practices are listed in the following paragraphs.

- Quantitative research
- Qualitative research
- Pure theoretical research
- Applied research
- Longitudinal studies
- Theory vs. empirical study

1.4 The research process

1.5 The hallmarks of scientific research

The hallmarks or main distinguishing characteristics of scientific research may be listed as follows (Bougie and Sekaran (2020)):

- Purposiveness
- Rigor
- Testability
- Replicability
- Precision and confidence
- Objectivity
- Generalizability
- Parsimony

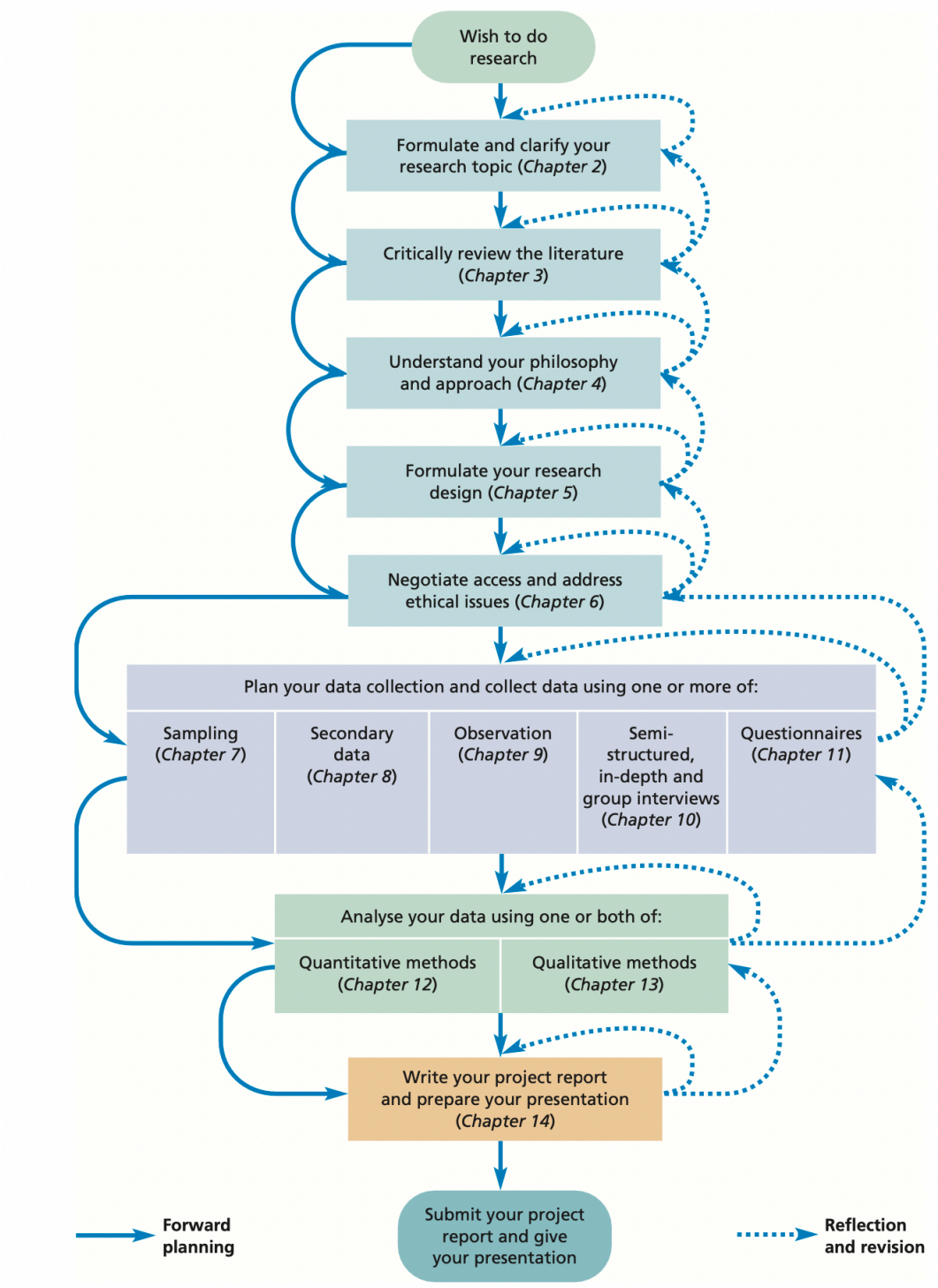


Figure 1.2
The research process
Source: © Mark Saunders, Philip Lewis and Adrian Thornhill 2009.

Figure 1.1: The Research process (Saunders, Lewis, and Thornhill (2019))

2 Formulating and clarifying the research topic

2.1 Attributes of a good research topic

Capability: is it feasible?

- Is the topic something with which you are really fascinated?
- Do you have, or can you develop within the project time frame, the necessary research skills to undertake the topic?
- Is the research topic achievable within the available time?
- Will the project still be current when you finish your project?
- Is the research topic achievable within the financial resources that are likely to be available?
- Are you reasonably certain of being able to gain access to data you are likely to require for this topic?

Appropriateness: is it worthwhile?

- Does the topic fit the specifications and meet the standards set by the examining institution?
- Does your research topic contain issues that have a clear link to theory?
- Are you able to state your research question(s) and objectives clearly?
- Will your proposed research be able to provide fresh insights into this topic?
- Does your research topic relate clearly to the idea you have been given (perhaps by an organisation)?
- Are the findings for this research topic likely to be symmetrical: that is, of similar value whatever the outcome?
- Does the research topic match your career goals?

2.2 Generating and refining research ideas

2.2.1 Generating ideas

If you have not been given an initial research idea there is a range of techniques that can be used to find and select a topic that you would like to research. They can be thought of as those that are predominantly rational thinking and those that involve more creative thinking.

Table 2.1: More frequently used techniques for generating and refining research ideas

Rational thinking	Creative thinking
Examining your own strenths and interests	Keeping a notebook of ideas
Looking at past project titles	Exploring personal preferences using past projects
Discussion	Relevance trees/mindmap
Searching the literature	Brainstorming
Scanning the media	

2.2.2 Refining research ideas

The Delphi technique

An additional approach that our students have found particularly useful in refining their research ideas is the Delphi technique. This involves using a group of people who are either involved or interested in the research idea to generate and choose a more specific research idea (Robson and McCartan (2016)). To use this technique you need:

- to brief the members of the group about the research idea (they can make notes if they wish);
- at the end of the briefing to encourage group members to seek clarification and more information as appropriate;
- to ask each member of the group, including the originator of the research idea, to generate independently up to three specific research ideas based on the idea that has been described (they can also be asked to provide a justification for their specific ideas);
- to collect the research ideas in an unedited and non-attributable form and to distribute them to all members of the group;
- a second cycle of the process (steps 2 to 4) in which individuals comment on the research ideas and revise their own contributions in the light of what others have said;

The preliminary study To begin with, it is a good practice to do a prelimanry study to see if the idea/project is viable at all. It is often known as pilot study or proof-of-concept study. It is important to remember that a successful preliminry/pilot/study is not a guarantee for success. The result must be scalable to larger volume.

Operational definition

To formulate a research question, one must define the concepts involved very clearly. Consider this example, "An investigation on mobile entertainment pattern of youth adolescents in Germany". To begin with this research topic, the researcher must describe the operational definition of:

- *mobile entertainment*: is it watching movies, youtube, listening music only?
- *young adolescents*: what age group we are talking about?
- *in Germany*: In whole Germany? Or the reseach will take place in a certain part of Germany?

2.3 Turning research ideas into research projects

2.3.1 Writing research questions

Defining research questions, rather like generating research ideas, is not a straightforward matter. It is important that the question is sufficiently involved to generate the sort of project that is consistent with the standards expected of you. A question that prompts a descriptive answer, for example 'What is the proportion of graduates entering the civil service who attended the old, established Germany universities?', is far easier to answer than: 'Why are graduates from old, established German universities more likely to enter the civil service than graduates from other universities?' More will be said about the importance of theory in defining the research question later in this section. However, beware of research questions that are too easy.

Clough and Nutbrown (2012) use what they call the 'Goldilocks test' to decide if research questions are either 'too big', 'too small', 'too hot' or 'just right'. Those that are too big probably need significant research funding because they demand too many resources. Questions that are too small are likely to be of insufficient substance, while those that are too 'hot' may be so because of sensitivities that may be aroused as a result of doing the research. This may be because of the timing of the research or the many other reasons that may upset key people who have a role to play, either directly or indirectly, in the research context. Research questions that are 'just right', note Clough and Nutbrown (2012), are those that are 'just right for investigation at this time, by this researcher in this setting'.

The pitfall that you must avoid at all costs is asking research questions that will not generate new insights. This raises the question of the extent to which you have consulted the relevant literature. It is perfectly legitimate to replicate research because you have a genuine concern about its applicability to your research setting (for example, your organisation). However, it certainly is not legitimate to display your ignorance of the literature.

McNiff and Whitehead (2000) make the point that the research question may not emerge until the research process has started and is therefore part of the process of 'progressive illumination'. They note that this is particularly likely to be the case in practitioner action research.

Table 2.2: Examples of research ideas and their derived focus research questions

Research idea	General focus research questions
Advertisement and share price	How does running of a TV advertising campaign designed to boost the image of a company affect its share price?
Job recruitment via the internet	How effective is recruiting for new staff via the internet in comparison with traditional methods?
The use of aromas as a marketing device	In what ways does the use of specific aromas in supermarkets affect buyer behavior?
The use of internet banking	What effect has the growth of Internet banking had upon the uses customers make of branch facilities?

It is often a useful starting point in the writing of research questions to begin with one general focus research question that flows from your research idea. This may lead to several more detailed questions or the definition of research objectives. Table 2.2 has some examples of general focus research questions.

In order to clarify the research question Clough and Nutbrown (2012) talk of the Russian doll principle. This means taking the research idea and 'breaking down the research questions from the original statement to something which strips away the complication of layers and obscurities until the very essence - the heart - of the question can be expressed … just as the Russian doll is taken apart to reveal a tiny doll at the center Clough and Nutbrown (2012).

Table 2.3: Phrasing research questions as research objectives

Research question	Research objective
Why have organisations introduced team briefing?	To identify organisations' objective for team briefing schemes?
How can the effectiveness of team briefing schemes be measured?	To establish suitable effectiveness criteria for team briefing schemes
Has team briefing been effective?	To describe the extent to which the effectiveness criteria for team briefing have been met
How can the effectiveness of team briefing be explained?	(a) To determine the factors associated with the effectiveness criteria for team briefing being met (b) To estimate whether some of those factors are more influential that other factors
Can the explanation be generalized?	To develop an explanatory theory that associates certain factors with the effectiveness of team briefing schemes

Your research may begin with a general focus research question that then generates more detailed research questions, or you may use your general focus research question as a base from which you write a set of research objectives. Objectives are more generally acceptable to the research community as evidence of the researcher's clear sense of purpose and direction. It may be that either is satisfactory. Do check whether your examining body has a preference. We contend that research objectives are likely to lead to greater specificity than research or investigative questions. Table 2.3 illustrates this point. It summarizes the objectives of some research conducted by one of our students. Expression of the first research question as an objective prompted a consideration of the objectives of the

Ideally, the research objective should pass the so-called SMART test. That is the objectives should be:

_ *Specific*: What precisely do you hope to achieve from undertaking the research?

- *Measurable*: What measures will you use to determine whether you have achieved your objectives?

- Achievable: Are the targets you have set for yourself achievable given all the possible constraints?

- *Realistic*: Given all the other demands upon your time, will you have the time and energy to complete the research on time?

- *Timely*: Will you have time to accomplish all your objectives in the time frame you have set?

3 Literature review

3.1 A continous process

After setting up the research question and hypotheses, we need to see what others did in the same subject area. This process is called literature review. There are several objectives of literature review:

- To see what methodologies are appropriate for the analysis
- To understand the gaps in the field
- To know the improvement suggestions from other researchers

The literature review can be started while setting up the research question and hypotheses and can continue till the end of the research project. This is because, the research process is often very long and it is important to get updated with publications during ongoing research project. Graphically, it may look like this,

3.2 Purpose of critical review

The precise purpose of your reading of the literature will depend on the approach you are intending to use in your research.

For some research projects it is necessary to use the literature to help you to identify theories and ideas that you will test using data. This is known as a *deductive approach* in which researcher develop a theoretical or conceptual framework, which is to be subsequently tested using data.

For other research projects the researcher will be planning to explore the data and to develop theories which will be subsequently related to the literature. This is known as an *inductive approach* and, although researchers still has a clearly defined purpose with research question(s) and objectives, the researchers do not start with any predetermined theories or conceptual frameworks.

The literature review has a number of other purposes. It can be,

- to help the researcher to refine the research question(s) and objectives further
- to highlight research possibilities that have been overlooked implicitly in research to date

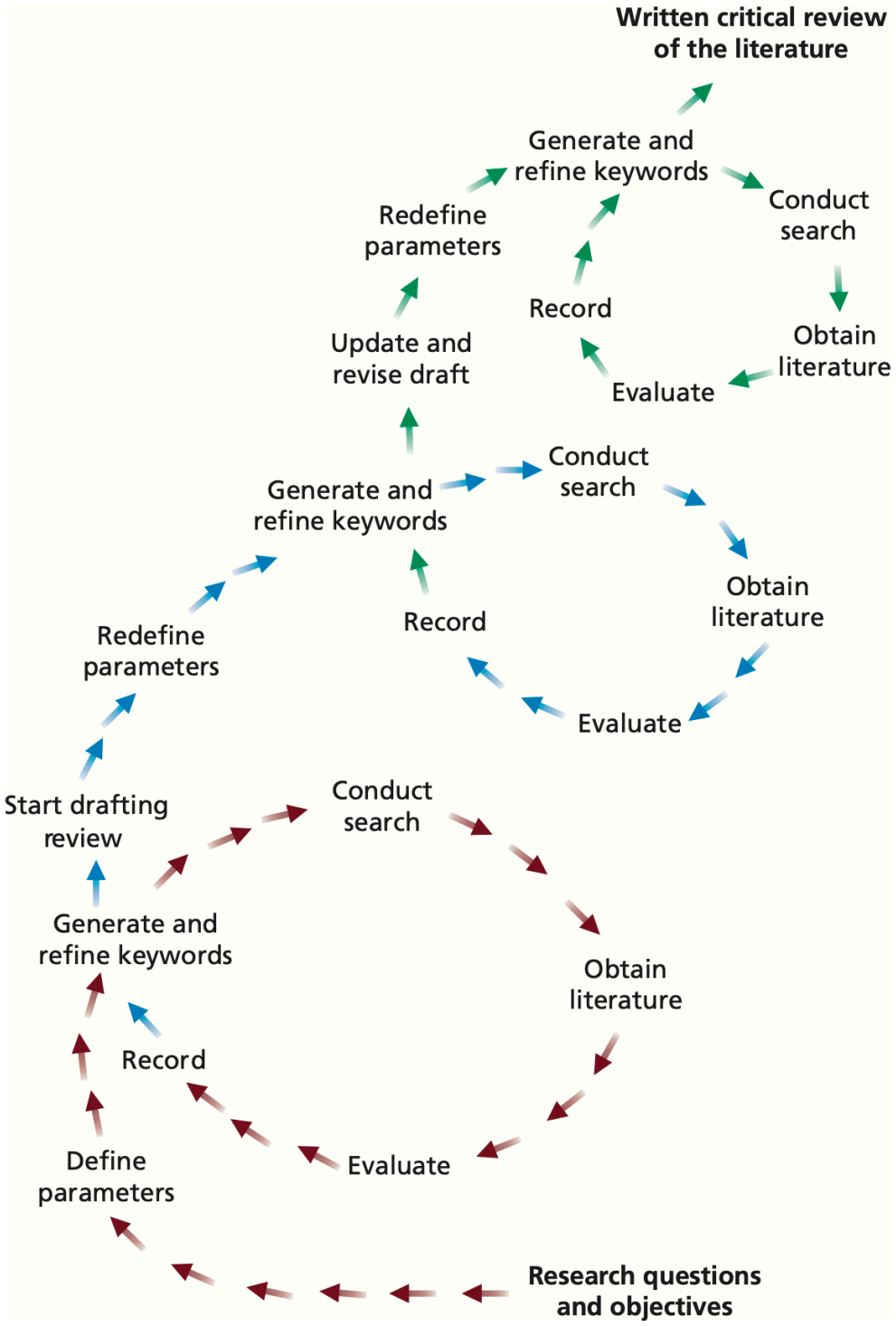


Figure 3.1: The literature review process (Saunders, Lewis, and Thornhill (2019))

- to discover explicit recommendations for further research. These can provide you with a superb justification the researchers' own research question(s) and objectives
- to help the researcher to avoid simply repeating work that has been done already
- to sample current opinions in newspapers, professional and trade journals, thereby gaining insights into the aspects of your research question(s) and objectives that are considered newsworthy;
- to discover and provide an insight into research approaches, strategies and techniques that may be appropriate to your own research question(s) and objectives.

3.3 Content of critical review

In considering the content of the critical review, the researcher will therefore need:

- to include the key academic theories within your chosen area of research;
- to demonstrate that your knowledge of your chosen area is up to date;
- through clear referencing, enable those reading your project report to find the original publications which you cite.

3.4 Literature sources

4 Theoretical framwork and hypothesis development

A *theoretical framework* represents your beliefs on how certain phenomena (or variables or concepts) are related to each other (a model) and an explanation of why you believe that these variables are associated with each other (a theory). Both the model and the theory flow logically from the documentation of previous research in the problem area. Integrating your logical beliefs with published research, taking into consideration the boundaries and constraints governing the situation, is pivotal in developing a scientific basis for investigating the research problem.

The process of building a theoretical framework includes:

- Introducing *operational definitions* of the concepts or variables in your model,
- Developing a conceptual model that provides a descriptive representation of your theory.
- Coming up with a theory that provides an explanation for relationships between the variables in your model.

From the theoretical framework, then, *testable hypotheses* can be developed to examine whether your theory is valid or not. The *hypothesized relationships* can thereafter be tested through appropriate statistical analyses. Hence, the entire deductive research project rests on the basis of the theoretical framework. Even if testable hypotheses are not necessarily generated (as in some applied research projects), developing a good theoretical framework is central to examining the problem under investigation.

Since a theoretical framework involves the identification of the network of relationships among the variables considered important to the study of any given problem situation, it is essential to understand what a variable means and what the different types of variables are.

4.1 Generating theory

A good *theoretical framework* identifies and defines the important variables in the situation that are relevant to the problem and subsequently describes and explains the interconnections among these variables. The relationships between the independent variables, the dependent variable(s), are elaborated.

It is not always easy to come up with generally agreed-upon definitions of the relevant variables. More often than not, there are many definitions available in the literature (for instance, there are literally dozens of definitions of "brand image," "customer satisfaction," and "service quality" available in the marketing literature). Still, well-chosen guiding definitions of concepts are needed, because they will help you to provide an explanation for the relationships between the variables in your model. What's more, they will also serve as a basis for the operationalization or measurement of your concepts in the data collection stage of the research process.

Hence, you will have to choose a useful definition from the literature (do not use dictionary definitions, they are usually too general). It is also important that you explain why you have chosen a particular definition as your guiding definition.

A conceptual model helps you to structure your discussion of the literature. A conceptual model describes your ideas about how the concepts (variables) in your model are related to each other. A schematic diagram of the conceptual model helps the reader to visualize the theorized relationships between the variables in your model and thus to obtain a quick idea about how you think that the management problem can be solved. Hence, conceptual models are often expressed in this form. However, relationships between variables can also be ade- quately expressed in words. Both a schematic diagram of the conceptual model and a description of the relation- ships between the variables in words should be given, so that the reader can see and easily comprehend the theorized relationships. This facilitates and stimulates discussion about the relationships between the variables in your model. It is therefore important that your model is based on a sound theory.

A theory or a clear explanation for the relationships in your model is the last component of the theoretical framework. A theory attempts to explain relationships between the variables in your model: an explanation should be provided for all the important relationships that are theorized to exist among the variables. If the nature and direction of the relationships can be theorized on the basis of the findings of previous research and/ or your own ideas on the subject, then there should also be an indication as to whether the relationships should be positive or negative and linear or nonlinear. From the theoretical framework, then, testable hypotheses can be developed to examine whether the theory formulated is valid or not.

Note that you do not necessarily have to "invent" a new theory every time you are undertaking a research project. In an applied research context you apply existing theories to a specific context. This means that argu- ments can be drawn from previous research. However, in a basic research context you will make some contribution to existing theories and models. In such a case, it is not (always) possible to use existing theories or explanations for relationships between variables. As a result, you will have to rely on your own insights and ideas.

4.2 Hypthothesis development

4.2.1 Definition of a hypothesis

A hypothesis can be defined as a tentative, yet testable, statement, which predicts what you expect to find in your empirical data. Hypotheses are derived from the theory on which your conceptual model is based and are often relational in nature. Along these lines, hypotheses can be defined as logically conjectured relationships between two or more variables expressed in the form of testable statements. By testing the hypotheses and confirming the conjectured relationships, it is expected that solutions can be found to correct the problem encountered.

4.2.1.1 If–then statements

As already stated, a hypothesis can be defined as a testable statement of the relationship among variables. A hypothesis can also test whether there are differences between two groups (or among several groups) with respect to any variable or variables. To examine whether or not the conjectured relationships or differences exist, these hypotheses can be set either as propositions or in the form of if–then statements. The two formats can be seen in the following two examples.

- Young women will be more likely to express dissatisfaction with their body weight, when they are more frequently exposed to images of thin models in advertisements.
- If young women are more frequently exposed to images of thin models in advertisements, then they will be more likely to express dissatisfaction with their body weight.

4.2.1.2 Directional and nondirectional hypotheses

If, in stating the relationship between two variables or comparing two groups, terms such as positive, negative, more than, less than, and the like are used, then these are directional hypotheses because the direction of the relationship between the variables (positive/negative) is indicated, as in the first example below, or the nature of the difference between two groups on a variable (more than/less than) is postulated, as in the second example.

- The greater the stress experienced in the job, the lower the job satisfaction of employees.
- Women are more motivated than men.

On the other hand, nondirectional hypotheses are those that do postulate a relationship or difference, but offer no indication of the direction of these relationships or differences. In other words, though it may be conjectured that there is a significant relationship between two variables, we may not be able to say whether the relationship is positive or negative, as in the first example below. Likewise, even if we can conjecture that there will be differences between

two groups on a particular variable, we may not be able to say which group will be more and which less on that variable, as in the second example.

There is a relation between arousal-seeking tendency and consumer preferences for complex product designs. There is a difference between the work ethic values of American and Asian employees.

Nondirectional hypotheses are formulated either because the relationships or differences have never been explored, and hence there is no basis for indicating the direction, or because there have been conflicting findings in previous research studies on the variables. In some studies a positive relationship might have been found, while in others a negative relationship might have been traced. Hence, the current researcher might only be able to hypothesize that there is a significant relationship, but the direction may not be clear. In such cases, the hypotheses can be stated nondirectionally. Note that in the first example there is no clue as to whether arousal-seeking tendency and preferences for complex product designs are positively or negatively correlated, and in the second example we do not know whether the work ethic values are stronger in Americans or in Asians. However, it would have been possible to state that arousal-seeking tendency and preferences for complex product designs are positively correlated, since previous research has indicated such a relationship. ,

5 Questionnaire Design

A questionnaire is a preformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives.

5.1 Designing a questionnaire

Designing the questionnaire is the most important stage in this type of research because once the questionnaire is designed you have determined the questions and the answers and you will not be able to go back and get further information. You need to be sure that the questions you ask are going to enable you to gather the data that you need – here you need to refer back to your operational definitions. How do you ask a set of questions that will show you whether a person is happy or not? Or has had a 'good' holiday? Or even whether they have really eaten what they said they have eaten?

Designing a questionnaire is both about working out how you are going to measure the presence of something and about the practicalities of finding a set of questions and answers that will enable you to do that and be meaningful to and answerable by all your respondents.

Thinking about your research topic and designing a questionnaire to gather data: * What do you want to know? * Who will be able to answer the questions? * Will they understand the questions? * How will they answer the questions? * Will they be able to give the answers they want to give?

5.2 Different types of data

A questionnaire is usually designed to collect a number of different types of data including: * facts – about people or events; * descriptions – people's descriptions about something that, for example, has happened to them; * knowledge – what people know about something; * opinions – what their opinion is about something they have experienced or know about; * attitudes/values – their attitudes towards other people, institutions, ideas and so on; * background information about the respondent which may be linked to the research topic.

5.3 Different types of answer

Questionnaires include ways of answering questions as well as ways of asking them. The two are clearly linked – the way the question is asked will determine the range of answers the respondent has to choose from. While this may seem obvious, it may not be immedi- ately apparent that when designing the questionnaire you need to have the data you will gather in mind as well as the questions you have to ask to get that data. The nature of the data you gather will determine how you are able to work with it when you come to analyse it. These are the main types of answer – or data – you will get from a questionnaire: * quantity – number of times, number of brothers, etc.; * category – age category, e.g. 16–25 years; job category, e.g. manual worker; ! answers chosen from a list of possible answers, e.g. yes/no/don't know; * position on a scale – for example, from 'very satisfied' to 'very unsatisfied'; ! rank position – for example, your first choice, your second choice, etc.; * open data – answers in respondents' own words.

5.4 Types of question

There are different ways of asking almost any question. The following are just some of the most commonly used questions in questionnaires.

5.4.1 Yes/No

The most simple question asks for a 'yes' or 'no' response and is used as a way of distinguishing between different groups of respondents. Basically there is no point in asking a yes/no question if all your respondents are likely to answer one or the other unless you are using it as a check question to ensure that you have the respondents you want. All of your respondents should be able to answer 'yes' or 'no' but it is sometimes advisable to add a 'don't know' or 'not applicable' category for any respondents who are unable to answer the question. In the example below it could be that the respondent has not been at home for the last six months because she has been in hospital.

5.4.2 Which category? How many? How much?

You will probably want to ask questions about the respondents themselves or about a situation. This (usually) factual data needs to be collected in a way that makes it easy for the respondent to give the data accurately.

5.4.3 Select from a list: single/multiple choice

If there are a set of answers we want respondents to choose from, it is common to list them and ask them either to select one or more or to 'tick all that apply'. Think carefully about what information you want from the question. An 'other' category is often included so that respondents can add any other answers which they feel do not fit in the categories you have given them to choose from as in the first example below. In the second example this would not be appropriate.

5.4.4 Agree/disagree with a statement: Likert scale

If you want to gather data about people's ideas, values, opinions or attitudes, you can ask respondents whether they agree or disagree with a statement which you have devised.

5.4.5 Rating scale

Another way of asking about respondents' opinions or attitudes is to use a rating scale. In this case they are asked to place their answer on a scale which can be from 1 to 5, to 7, or to 9. It is usual to have an odd-numbered scale as this gives respondents the option of choosing the midpoints.

5.4.6 Open question

Sometimes a questionnaire includes questions that allow respondents to answer as they wish. If the questionnaire is self-completion, a box is included for the respondent's answer and the size of the box is usually an indication to the respondent of the length and detail of their expected answer.

5.5 Types of questionnaire

5.5.1 Personally administered questionnaires

When the survey is confined to a local area a good way to collect data is to personally administer the questionnaires. The main advantage of this is that the researcher or a member of the research team can collect all the completed responses within a short period of time. Any doubts that the respondents might have on any question can be clarified on the spot. The researcher also has the opportunity to introduce the research topic and motivate the respondents to offer their frank answers.

Administering questionnaires to large numbers of individuals at the same time is less expensive and consumes less time than interviewing; equally, it does not require as much skill to administer a questionnaire as it does to conduct interviews. Wherever possible, questionnaires are best administered personally because of these advantages. A disadvantage of personally administered questionnaires is that the researcher may introduce a bias by explaining questions differently to different people; participants may be in fact answering different questions as compared to those to whom the questionnaire was mailed. What's more, personally administered questionnaires take time and a lot of effort. For this reason, electronic questionnaires are widely used these days.

5.5.2 Mail questionnaires

A mail questionnaire is a self-administered (paper and pencil) questionnaire that is sent to respondents via the mail. This method has long been the backbone of business research, but with the arrival of the Internet, mobile phones, and social networks, mail questionnaires have become redundant or even obsolete. Instead, online questionnaires are posted on the Internet or sent via email.

Advantages and disadvantages of different questionnaires

Mode of data collection	Advantages	Disadvantages
Personally administered questionnaires	Can establish rapport and motivate respondent. Doubts can be clarified. Less expensive when administered to groups of respondents. Almost 100% response rate ensured. Anonymity of respondent is high.	Explanations may introduce a bias. Take time and effort.
Mail questionnaires	Anonymity is high. Wide geographic regions can be reached. Token gifts can be enclosed to seek compliance. Respondent can take more time to respond at convenience. Can be administered electronically, if desired.	Response rate is almost always low. A 30% rate is quite acceptable. Cannot clarify questions. Follow-up procedures for nonresponses are necessary.
Electronic questionnaires	Easy to administer. Can reach globally. Very inexpensive. Fast delivery. Respondents can answer at their convenience like the mail questionnaire. Automatic processing of answers.	Computer literacy is a must. Sampling issues. High non-response. Not always possible to generalize findings. Respondent must be willing to complete the survey. People find invitations via email rude and offensive; emails are deleted or people complain.

Figure 5.1: Advantages and disadvantages of different questionnaire

5.5.3 Electronic and online questionnaires

The distribution of electronic or online questionnaires is easy and fast. All you have to do is to email the invitations to complete a survey, post a link on a website or personal blog, or use social networks. Online questionnaires are usually created as "web forms" with a database to store the answers and statistical software to provide statistical analysis. Until recently, conducting online surveys was a time-consuming and tedious task requiring familiarity with web authoring programs, HTML codes, and/or scripting programs. Today, survey development software packages and online survey services make online survey research much easier and more accessible.

5.6 Guidelines for questionnaire design

Sound questionnaire design principles should focus on three areas. The first relates to the wording of the questions. The second refers to the planning of issues with regard to how the variables will be categorized, scaled, and coded after receipt of the responses. The third pertains to the general appearance of the questionnaire. All three are important issues in questionnaire design because they can minimize bias in research. These issues are discussed below.

5.6.1 Principles of wording

The principles of wording refer to such factors as:

1. The appropriateness of the content of the questions.
2. How questions are worded and the level of sophistication of the language used.
3. The type and form of questions asked.
4. The sequencing of the questions.
5. The personal data sought from the respondents. Each of these is explained below.

5.6.1.1 Content and purpose of the questions

The nature of the variable tapped – subjective feelings or objective facts – will determine what kinds of questions are asked. If the variables tapped are of a subjective nature (e.g., satisfaction, involvement), where respondents' beliefs, perceptions, and attitudes are to be measured, the questions should tap the dimensions and elements of the concept. Where objective variables, such as age and educational levels of respondents, are tapped, a single direct question – preferably one that has an ordinal scaled set of categories – is appropriate. Thus, the purpose of each question should be carefully considered so that the variables are adequately measured and yet no superfluous questions are asked.

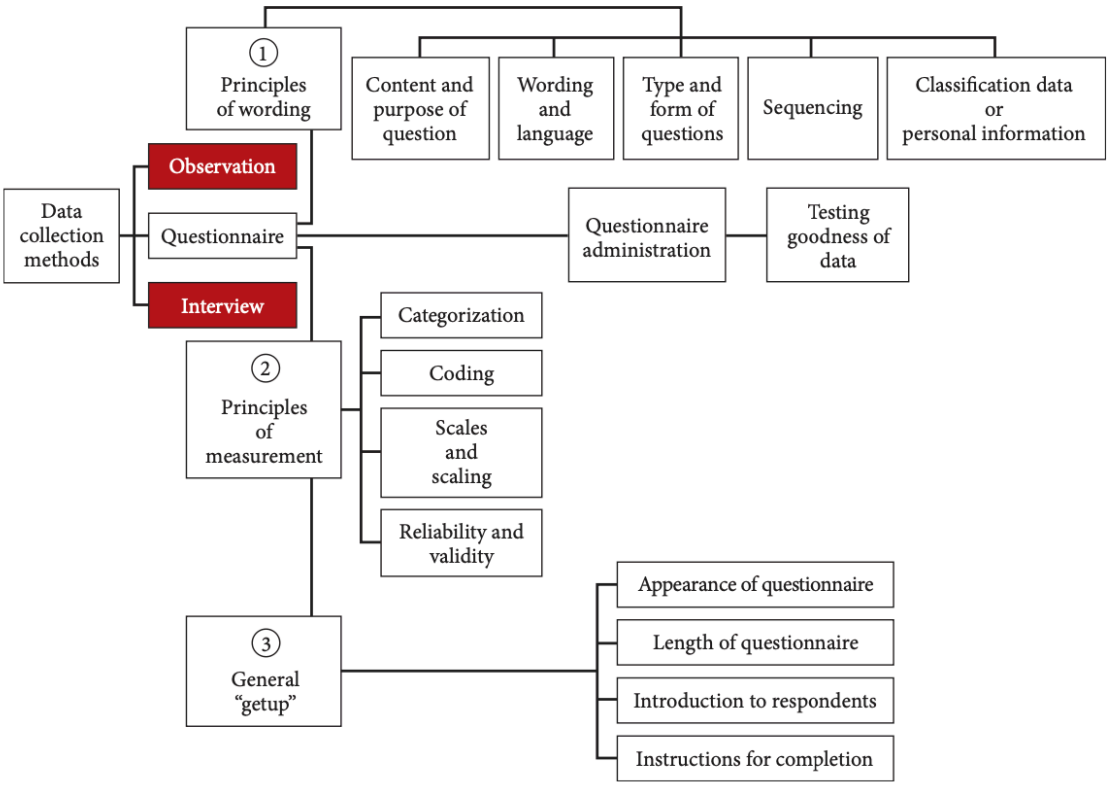


Figure 5.2: Principles of questionnaire design

5.6.1.2 Language and wording of the questionnaire

The language of the questionnaire should approximate the level of understanding of the respondents. The choice of words will depend on their educational level, the usage of terms and idioms in the culture, and the frames of reference of the respondents. For instance, even when English is the spoken or official language in two cultures, certain words may be alien to one culture. Terms such as "working here is a drag" and "she is a compulsive worker" may not be interpreted the same way in different cultures. Some blue-collar workers may not understand terminology such as "organizational structure." Thus, it is essential to word the questions in a way that can be understood by the respondent. If some questions are either not understood or are interpreted differently by the respondent, the researcher will obtain the wrong answers to the questions, and responses will thus be biased. Hence, the questions asked, the language used, and the wording should be appropriate to tap respondents' attitudes, perceptions, and feelings.

5.6.1.3 Type and form of questions

The type of question refers to whether the question is open-ended or closed. The form of the question refers to whether it is positively or negatively worded.

- *Open-ended versus closed questions* Open-ended questions allow respondents to answer them in any way they choose. An example of an open-ended question is asking the respondent to state five things that are interesting and challenging in the job.

Another example is asking what the respondents like about their supervisors or their work environment. A third example is to invite their comments on the investment portfolio of the firm.

A closed question, in contrast, asks the respondents to make choices among a set of alternatives given by the researcher. For instance, instead of asking the respondent to state any five aspects of the job that she finds interesting and challenging, the researcher might list 10 or 15 aspects that might seem interesting or challenging in jobs and ask the respondents to rank the first five among these in the order of their preference. All items in a questionnaire using a nominal, ordinal, Likert, or ratio scale are considered closed.

Closed questions help the respondents to make quick decisions to choose among the several alternatives before them. They also help the researcher to code the information easily for subsequent analysis. Care has to be taken to ensure that the alternatives are mutually exclusive and collectively exhaustive. If there are overlapping categories, or if all possible alternatives are not given (i.e., the categories are not exhaustive), the respondents might get confused and the advantage of their being enabled to make a quick decision is thus lost.

Some respondents may find even well-delineated categories in a closed question rather confining and might avail themselves of the opportunity to make additional comments. This is the reason

why many questionnaires end with a final open-ended question that invites respondents to comment on topics that might not have been covered fully or adequately. The responses to such open-ended questions have to be edited and categorized for subsequent data analysis.

- *Positively and negatively worded questions* Instead of phrasing all questions positively, it is advisable to include some negatively worded questions as well, so the tendency in respondents to mechanically circle the points toward one end of the scale is minimized.

For example, let us say that a set of six questions is used to tap the variable "perceived success" on a five-point scale, with 1 being "very low" and 5 being "very high" on the scale. A respondent who is not particularly interested in completing the questionnaire is more likely to stay involved and remain alert while answering the questions when positively and negatively worded questions are interspersed in it.

For instance, if the respondent has circled 5 for a positively worded question such as, **"I feel I have been able to accomplish a number of different things in my job,"** he cannot circle number 5 again to the negatively worded question, **"I do not feel I am very effective in my job."** The respondent is now shaken out of any likely tendency to mechanically respond to one end of the scale. In case this does still happen, the researcher has an opportunity to detect such bias. A good questionnaire should therefore include both positively and negatively worded questions. The use of double negatives and excessive use of the words "not" and "only" should be avoided in negatively worded questions because they tend to confuse respondents. For instance, it is better to say "Coming to work is not great fun" than to say "Not coming to work is greater fun than coming to work." Likewise, it is better to say "The rich need no help" than to say "Only the rich do not need help."

- *Double-barreled questions* A question that lends itself to different possible responses to its subparts is called a double-barreled question. Such questions should be avoided and two or more separate questions asked instead.

For example, the question **"Do you think there is a good market for the product and that it will sell well?"** could bring a "yes" response to the first part (i.e., there is a good market for the product) and a "no" response to the latter part (i.e., it will not sell well for various other reasons).

In this case, it would be better to ask two questions: (1) **"Do you think there is a good market for the product?"** and (2) **"Do you think the product will sell well?"** The answers might be "yes" to both, "no" to both, "yes" to the first and "no" to the second, or "yes" to the second and "no" to the first. If we combined the two questions and asked a double-barreled question, we would confuse the respondents and obtain ambiguous responses. Hence, double-barreled questions should be eliminated.

Ambiguous questions Even questions that are not double-barreled might be ambiguously worded and the respondent may not be sure what exactly they mean. An example of such a question is **"To what extent would you say you are happy?"**

Respondents might find it difficult to decide whether the question refers to their state of feelings in the workplace, or at home, or in general. Thus, responses to ambiguous questions have built-in bias in as much as different respondents might interpret such items in the questionnaire differently.

The result is a mixed bag of ambiguous responses that do not accurately provide the correct answer to the question.

- *Recall-dependent questions* Some questions might require respondents to recall experiences from the past that are hazy in their memory. Answers to such questions might have bias.

For instance, if an employee who has had 30 years' service in the organization is asked to state when he first started working in a particular department and for how long, he may not be able to give the correct answers and may be way off in his responses. A better source for obtaining that information would be the personnel records.

- *Leading questions* Questions should not be phrased in such a way that they lead the respondents to give the responses that the researcher would like them to give. An example of such a question is: **"Don't you think that in these days of escalating costs of living, employees should be given good pay rises?"** By asking a leading question, we are signaling and pressuring respondents to say "yes."

Tagging the question to rising living costs makes it difficult for most respondents (unless they are the top bosses in charge of budget and finances) to say, **"No; not unless their productivity increases too!"**

Another way of asking the question about pay rises to elicit less biased responses would be: **"To what extent do you agree that employees should be given higher pay rises?"** If respondents think that the employees do not deserve a higher pay rise at all, their response will be "Strongly Disagree"; if they think that respondents should definitely be given a high pay rise, they will respond to the "Strongly Agree" end of the scale, and the in-between points will be chosen depending on the strength of their agreement or disagreement. In this case, the question is not framed in a suggestive manner as in the previous instance.

- *Loaded questions* Another type of bias in questions occurs when they are phrased in an emotionally charged manner. An example of such a loaded question is asking employees: **"To what extent do you think management is likely to be vindictive if the union decides to go on strike?"** The words "strike" and "vindictive" are emotionally charged terms, polarizing management and unions. Hence, asking a question such as the above would elicit strongly emotional and highly biased responses. If the purpose of the question is twofold – that is, to find (1) the extent to which employees are in favor of a strike and (2) the extent to which they fear adverse reactions if they do go on strike – then these are the two specific questions that need to be asked. It may turn out that

the employees are not strongly in favor of a strike and they also do not believe that management would retaliate if they did go on strike!

- *Social desirability* Questions should not be worded such that they elicit socially desirable responses. For instance, a question such as **"Do you think that older people should be laid off?"** would elicit a response of "no," mainly because society would frown on a person who said that elderly people should be fired even if they are capable of performing their jobs satisfactorily. Hence, irrespective of the true feelings of the respondent, a socially desirable answer would be provided. If the purpose of the question is to gauge the extent to which organizations are seen as obligated to retain those above 65 years of age, a differently worded question with less pressure toward social desirability would be: **"There are advantages and disadvantages to retaining senior citizens in the workforce. To what extent do you think companies should continue to keep the elderly on their payroll?"**

Sometimes certain items that tap social desirability are deliberately introduced at various points in the questionnaire and an index of each individual's social desirability tendency is calculated therefrom. This index is then applied to all other responses given by the individual in order to adjust for social desirability bias.

- *Length of questions* Finally, simple, short questions are preferable to long ones. As a rule of thumb, a question or a statement in the questionnaire should not exceed 20 words, or exceed one full line in print.

5.6.1.4 Sequencing of questions

The sequence of questions in the questionnaire should be such that the respondent is led from questions of a general nature to those that are more specific, and from questions that are relatively easy to answer to those that are progressively more difficult. This funnel approach, as it is called, facilitates the easy and smooth progress of the respondent through the items in the questionnaire. The progression from general to specific questions might mean that the respondent is first asked questions of a global nature that pertain to the issue, and then is asked more incisive questions regarding the specific topic. Easy questions might relate to issues that do not involve much thinking; the more difficult ones might call for more thought, judgment, and decision making in providing the answers.

In determining the sequence of questions, it is advisable not to place contiguously a positively worded and a negatively worded question tapping the same element or dimension of a concept. For instance, placing two questions such as the following, one immediately after the other, is not only awkward but might also seem insulting to the respondent.

I have opportunities to interact with my colleagues during work hours.

I have few opportunities to interact with my colleagues during work hours.

First, there is no need to ask the very same question in both a positive and a negative way. Second, if for some reason this is deemed necessary (e.g., to check the consistency of the responses), the two questions should be placed in different parts of the questionnaire, as far apart as possible.

The way questions are sequenced can also introduce certain biases, frequently referred to as ordering effects. Though randomly placing the questions in the questionnaire reduces any systematic bias in the responses, it is very rarely done, because of subsequent confusion while categorizing, coding, and analyzing the responses.

In sum, the language and wording of the questionnaire focus on such issues as the type and form of questions asked (i.e., open-ended and closed questions, and positively and negatively worded questions), as well as avoiding double-barreled questions, ambiguous questions, leading questions, loaded questions, questions prone to tap socially desirable answers, and those involving distant recall. Questions should also not be unduly long. Using the funnel approach helps respondents to progress through the questionnaire with ease and comfort.

5.6.1.5 Classification data or personal information

Classification data, also known as personal information or demographic questions, elicit such information as age, educational level, marital status, and income. Unless absolutely necessary, it is best not to ask for the name of the respondent. If, however, the questionnaire has to be identified with the respondents for any reason, then the questionnaire can be numbered and connected by the researcher to the respondent's name, in a separately maintained, private document. This procedure should be clearly explained to the respondent. The reason for using the numerical system in questionnaires is to ensure the anonymity of the respondent.

6 Sampling design

The sampling techniques available to you can be divided into two types:

- probability or representative sampling;
- non-probability or judgmental sampling.

With probability samples the chance, or probability, of each case being selected from the population is known and is usually equal for all cases. This means that it is possible to answer research questions and to achieve objectives that require you to estimate statistically the characteristics of the population from the sample. Consequently, probability sampling is often associated with survey and experimental research strategies.

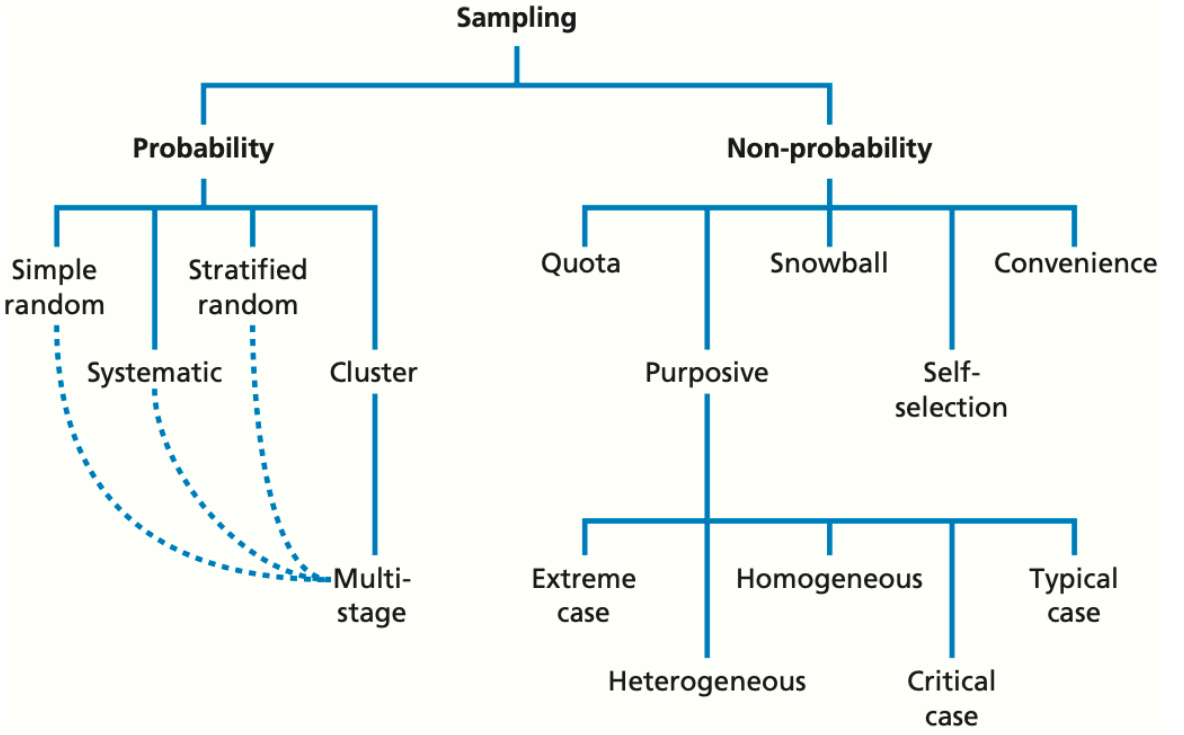


Figure 6.1: Sampling techniques

For non-probability samples, the probability of each case being selected from the total population is not known and it is impossible to answer research questions or to address objectives that require you to make statistical inferences about the characteristics of the population. You may still be able to generalise from non-probability samples about the population, but not on statistical grounds.

6.1 Probability sampling

Probability sampling (or representative sampling) is most commonly associated with survey-based research strategies where you need to make inferences from your sample about a population to answer your research question(s) or to meet your objectives. The process of probability sampling can be divided into four stages:

- Identify a suitable sampling frame based on your research question(s) or objectives.
- Decide on a suitable sample size.
- Select the most appropriate sampling technique and select the sample.
- Check that the sample is representative of the population.

6.1.1 The sampling frame

The sampling frame for any probability sample is a complete list of all the cases in the population from which your sample will be drawn. If your research question or objective is concerned with members of a local golf club, your sampling frame will be the complete membership list for that golf club. If your research question or objective is concerned with registered childminders in a local area, your sampling frame will be the directory of all registered childminders in this area. In setting sample frame, the following questions should be answered:

- How recently was the sampling frame compiled, in particular is it up to date?
- Does the sampling frame include all cases, in other words is it complete?
- Does the sampling frame contain the correct information, in other words is it accurate?
- Does the sampling frame exclude irrelevant cases, in other words is it precise?
- (For purchased lists) Can you establish and control precisely how the sample will be selected?

6.1.2 Deciding on a suitable sample size

Generalisations about populations from data collected using any probability sample are based on statistical probability. The larger your sample's size the lower the likely error in generalising to the population. Probability sampling is therefore a compromise between the accuracy of your findings and the amount of time and money you invest in collecting, checking and analysing the data. Your choice of sample size within this compromise is governed by:

- the confidence you need to have in your data – that is, the level of certainty that the characteristics of the data collected will represent the characteristics of the total population;
- the margin of error that you can tolerate - that is, the accuracy you require for any estimates made from your sample;
- the types of analyses you are going to undertake; and to a lesser extent:
- the size of the total population from which your sample is being drawn.

Statisticians have proved that the larger the absolute size of a sample, the more closely its distribution will be to the normal distribution and thus the more robust it will be. This relationship, known as the central limit theorem, occurs even if the population from which the sample is drawn is not normally distributed. Statisticians have also shown that a sample size of 30 or more will usually result in a sampling distribution for the mean that is very close to a normal distribution.

It is likely that, if you are undertaking statistical analyses on your sample, you will be drawing conclusions from these analyses about the population from which your sample was selected. This process of coming up with conclusions about a population on the basis of data describing the sample is called statistical inference and allows you to calculate how probable it is that your result, given your sample size, could have been obtained by chance. Such probabilities are usually calculated automatically by statistical analysis software. However, it is worth remembering that, providing they are not biased, samples of larger absolute size are more likely to be representative of the population from which they are drawn than smaller samples and, in particular, the mean (average) calculated for the sample is more likely to equal the mean for the population. This is known as the law of large numbers.

Researchers normally work to a 95 per cent level of certainty. This means that if your sample was selected 100 times, at least 95 of these samples would be certain to represent the characteristics of the population. The confidence level states the precision of your estimates of the population as the percentage that is within a certain range or margin of error.

The above table provides a rough guide to the different minimum sample sizes required from different sizes of population given a 95 per cent confidence level for different margins of error. It assumes that data are collected from all cases in the sample. For most business and management research, researchers are content to estimate the population's characteristics at 95 per cent certainty to within plus or minus 3 to 5 per cent of its true values. This means that if 45 per cent of your sample are in a certain category then you will be 95 per cent certain that your estimate for the total population within the same category will be 45 per cent plus or minus the margin of error – somewhere between 42 and 48 per cent for a 3 per cent margin of error.

As you can see from the above, the smaller the absolute size of the sample and, to a far lesser extent, the smaller the relative proportion of the total population sampled, the greater the margin of error. Within this, the impact of absolute sample size on the margin of error decreases for larger sample sizes. Some argue that it is for this reason that many market

	Margin of error			
Population	**5%**	**3%**	**2%**	**1%**
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1 000	278	516	706	906
2 000	322	696	1091	1655
5 000	357	879	1622	3288
10 000	370	964	1936	4899
100 000	383	1056	2345	8762
1 000 000	384	1066	2395	9513
10 000 000	384	1067	2400	9595

Figure 6.2: Sample sizes for different sizes of population at a 95 percent confidence level (assuming the data are collected from all cases in the sample)

research companies limit their samples' sizes to approximately 2000. Unfortunately, from many samples, a 100 per cent response rate is unlikely and so your sample will need to be larger to ensure sufficient responses for the margin of error you require.

6.1.3 Selecting the most appropriate sampling techniques and the sample

Having chosen a suitable sampling frame and established the actual sample size required, you need to select the most appropriate sampling technique to obtain a representative sample. Five main techniques can be used to select a probability sample: - simple random; - systematic; - stratified random; - cluster; - multi-stage.

Your choice of probability sampling technique depends on your research question(s) and your objectives.

6.1.3.1 Simple random sampling

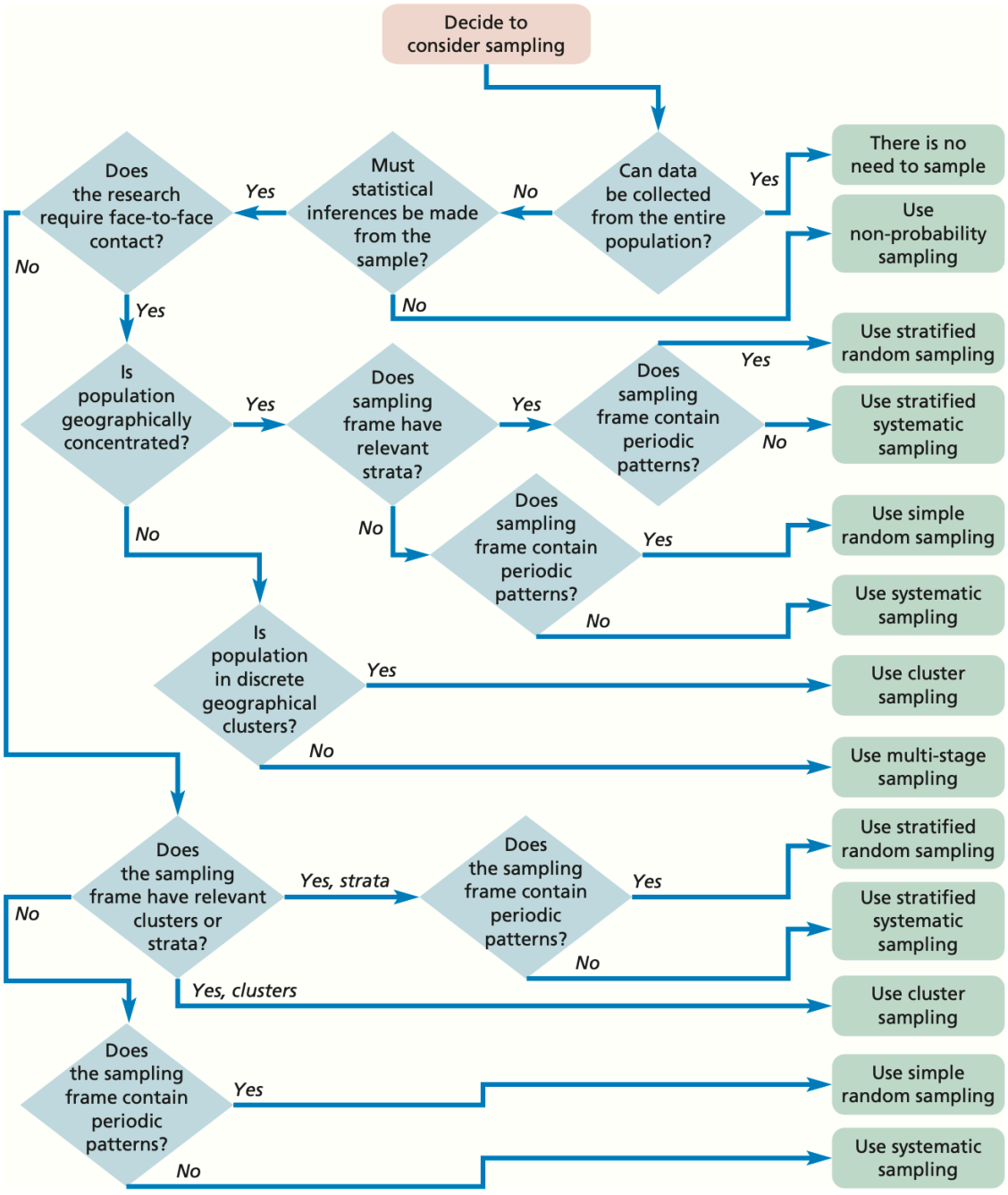
Simple random sampling (sometimes called just random sampling) involves you selecting the sample at random from the sampling frame using either random number tables.

It is usual to select your first random number at random (closing your eyes and pointing with your finger is one way!) as this ensures that the set of random numbers obtained for different samples is unlikely to be the same. If you do not, you will obtain sets of numbers that are random but identical.

6.1.3.2 Systematic sampling

Systematic sampling involves you selecting the sample at regular intervals from the sampling frame. To do this you:

- Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on.
- Select the first case using a random number.
- Calculate the sampling fraction.
- Select subsequent cases systematically using the sampling fraction to determine the frequency of selection.



Note: Random sampling ideally requires a sample size of over a few hundred.

Figure 6.3: Selecting a probability sample)

6.1.3.3 Stratified random sampling

Stratified random sampling is a modification of random sampling in which you divide the population into two or more relevant and significant strata based on one or a number of attributes. In effect, your sampling frame is divided into a number of subsets. A ran- dom sample (simple or systematic) is then drawn from each of the strata. Consequently, stratified sampling shares many of the advantages and disadvantages of simple random or systematic sampling. Dividing the population into a series of relevant strata means that the sample is more likely to be representative, as you can ensure that each of the strata is represented proportionally within your sample. However, it is only possible to do this if you are aware of, and can easily distinguish, significant strata in your sampling frame. In addition, the extra stage in the sampling procedure means that it is likely to take longer, to be more expensive, and to be more difficult to explain than simple random or systematic sampling.

In some instances, your sampling frame will already be divided into strata. A sampling frame of employee names that is in alphabetical order will automatically ensure that, if systematic sampling is used (discussed earlier), employees will be sampled in the correct proportion to the letter with which their name begins. Similarly, membership lists that are ordered by date of joining will automatically result in stratification by length of membership if systematic sampling is used.

6.1.3.4 Cluster sample

Cluster sampling is, on the surface, similar to stratified sampling as you need to divide the population into discrete groups prior to sampling (Henry 1990). The groups are termed clusters in this form of sampling and can be based on any naturally occurring grouping. For example, you could group your data by type of manufacturing firm or geographical area.

For cluster sampling your sampling frame is the complete list of clusters rather than a complete list of individual cases within the population. You then select a few clusters, normally using simple random sampling. Data are then collected from every case within the selected clusters. The technique has three main stages:

- choose the cluster grouping for your sampling frame.
- Number each of the clusters with a unique number. The first cluster is numbered 0, the second 1 and so on.
- Select your sample using some form of random sampling as discussed earlier.

Selecting clusters randomly makes cluster sampling a probability sampling technique.

Sample technique	Sampling frame required	Size of sample needed	Geographical area to which suited	Relative cost	Easy to explain to support workers?	Advantages compared with simple random
Simple random	Accurate and easily accessible	Better with over a few hundred	Concentrated if face-to-face contact required, otherwise does not matter	High if large sample size or sampling frame not computerised	Relatively difficult to explain	–
Systematic	Accurate, easily accessible and not containing periodic patterns. Actual list not always needed	Suitable for all sizes	Concentrated if face-to-face contact required, otherwise does not matter	Low	Relatively easy to explain	Normally no difference
Stratified random	Accurate, easily accessible, divisible into relevant strate (see comments for simple random and systematic as appropriate)	See comments for simple random and systematic as appropriate	Concentrated if face-to-face contact required, otherwise does not matter	Low, provided that lists of relevant strata available	Relatively difficult to explain (once strata decided, see comments for simple random and systematic as appropriate	Better comparison and hence representation across strata. Differential response rates may necessitate re-weighting
Cluster	Accurate, easily accessible, relates to relevant clusters, not individual population members	As large as practicable	Dispersed if face-to-face contact required and geographically based clusters used	Low, provided that lists of relevant clusters available	Relatively difficult to explain until clusters selected	Quick but reduced precision
Multi-stage	Initial stages: geographical, Final stage: needed only for geographical areas selected, see comments for simple random and systematic as appropriate	Initial stages: as large as practicable. Final stage: see comments for simple random and systematic as appropriate	Dispersed if face-to-face contact required, otherwise no need to use this technique!	Low, as sampling frame for actual survey population required only for final stage	Initial stages: relatively difficult to explain. Final stage: see comments for simple random and systematic as appropriate	Difficult to adjust for differential response rates. Substantial errors possible! However, often only practical approach when sampling a large complicated population

Figure 6.4: Comparison of different techniques)

6.1.3.5 Multi-stage sampling

Multi-stage sampling, sometimes called multi-stage cluster sampling, is a development of cluster sampling. It is normally used to overcome problems associated with a geographically dispersed population when face-to-face contact is needed or where it is expensive and time consuming to construct a sampling frame for a large geographical area. However, like cluster sampling, you can use it for any discrete groups, including those that are not geographically based. The technique involves taking a series of cluster samples, each involving some form of random sampling.

6.1.4 Checking that the sample is representative

Often it is possible to compare data you collect from your sample with data from another source for the population. For example, you can compare data on the age and socio-economic characteristics of respondents in a marketing survey with these characteristics for the population in that country as recorded by the latest national census of population. If there is no statistically significant difference, then the sample is representative with respect to these characteristics.

6.2 Non-probability sampling

The techniques for selecting samples discussed earlier have all been based on the assumption that your sample will be chosen statistically at random. Consequently, it is possible to specify the probability that any case will be included in the sample. However, within business research, such as market surveys and case study research, this may either not be possible (as you do not have a sampling frame) or appropriate to answering your research question. This means your sample must be selected some other way. Non- probability sampling (or non-random sampling) provides a range of alternative techniques to select samples based on your subjective judgement. In the exploratory stages of some research projects, such as a pilot survey, a non-probability sample may be the most practical, although it will not allow the extent of the problem to be determined. Subsequent to this, probability sampling techniques may be used. For other business and management research projects your research question(s), objectives and choice of research strategy may dictate non-probability sampling.

6.2.1 Deciding on a suitatble sample size

For all non-probability sampling techniques, other than for quota samples the issue of sample size is ambiguous and, unlike probability sampling, there are no rules. Rather the logical relationship between your sample selection technique and the purpose and focus of your research is important, generalisations being made to theory rather than about a population.

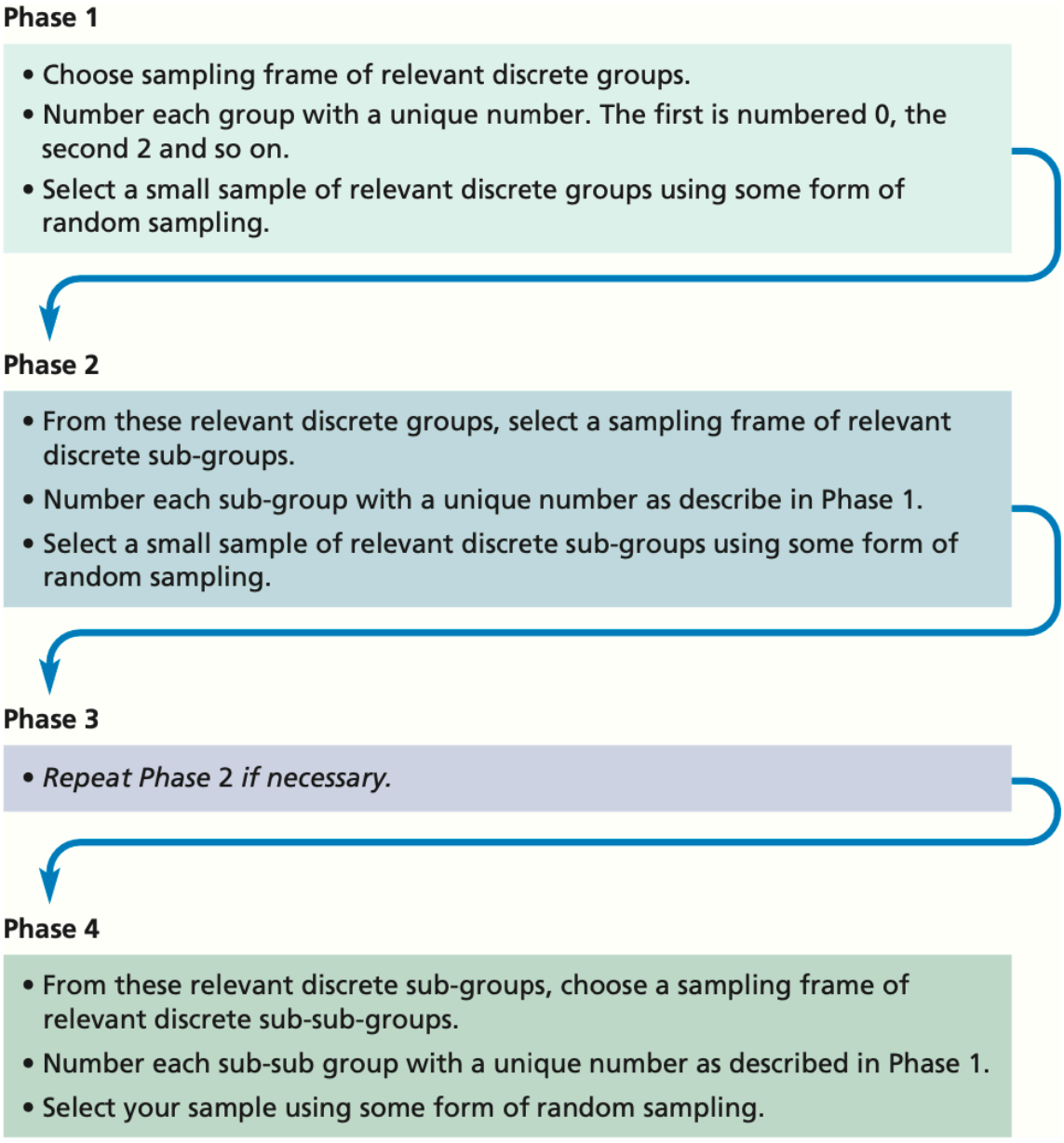


Figure 6.5: Phases of multistage sampling)

Consequently, your sample size is dependent on your research question(s) and objectives - in particular, what you need to find out, what will be useful, what will have credibility and what can be done within your available resources.

6.2.2 Selecting the most appropriate sampling technique and the sample

Having decided the likely suitable sample size, you need to select the most appropriate sampling technique to enable you to answer your research question from the range of non-probability sampling techniques available.

6.2.2.1 Quota sampling

Quota sampling is entirely non-random and is normally used for interview surveys. It is based on the premise that your sample will represent the population as the variability in your sample for various quota variables is the same as that in the population. Quota sampling is therefore a type of stratified sample in which selection of cases within strata is entirely non-random (Barnett 1991). To select a quota sample you:

- Divide the population into specific groups.
- Calculate a quota for each group based on relevant and available data.
- Give each interviewer an 'assignment', which states the number of cases in each quota from which they must collect data.
- Combine the data collected by interviewers to provide the full sample.

Quota sampling has a number of advantages over the probabilistic techniques. In particular, it is less costly and can be set up very quickly. If, as with television audience research surveys, your data collection needs to be undertaken very quickly then quota sampling may be the only possibility. In addition, it does not require a sampling frame and, therefore, may be the only technique you can use if one is not available.

Quota sampling is normally used for large populations. For small populations, it is usually possible to obtain a sampling frame. Decisions on sample size are governed by the need to have sufficient responses in each quota to enable subsequent statistical analy- ses to be undertaken. This often necessitates a sample size of between 2000 and 5000.

6.2.2.2 Purposive sampling

Purposive or judgemental sampling enables you to use your judgement to select cases that will best enable you to answer your research question(s) and to meet your objectives. This form of sample is often used when working with very small samples such as in case study research and when you wish to select cases that are particularly informative.

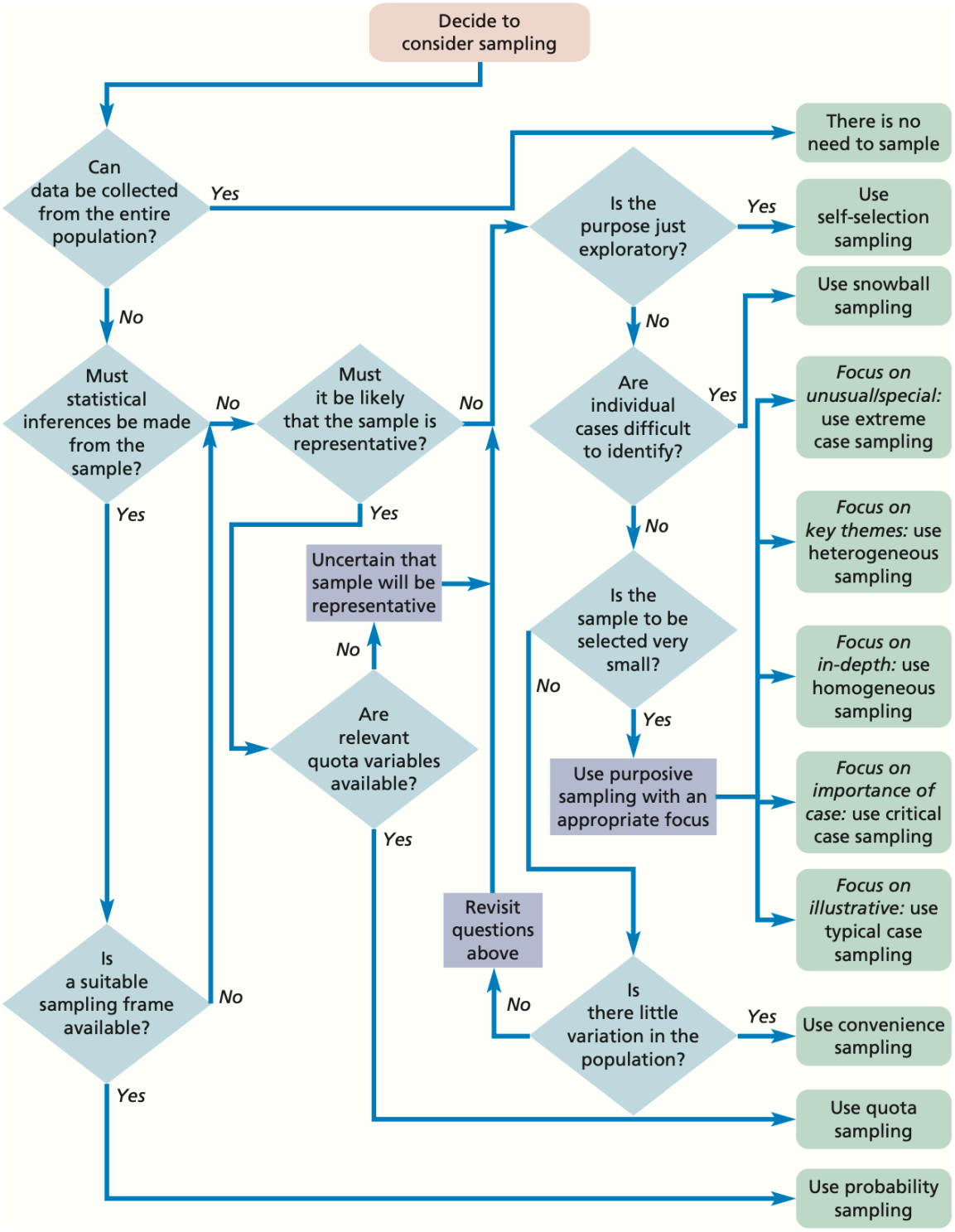


Figure 6.6: Selecting a non-probability sampling technique)

6.2.2.3 Snowball sampling

Snowball sampling is commonly used when it is difficult to identify members of the desired population, for example people who are working while claiming unemployment benefit. You, therefore, need to:

- Make contact with one or two cases in the population.
- Ask these cases to identify further cases.
- Ask these new cases to identify further new cases (and so on).
- Stop when either no new cases are given or the sample is as large as is manageable.

The main problem is making initial contact. Once you have done this, these cases identify further members of the population, who then identify further members, and so the sample snowballs.

Sample type	Likelihood of sample being representative	Types of research in which useful	Relative costs	Control over sample contents
Quota	Reasonable to high, although dependent on selection of quota variables	Where costs constrained or data needed very quickly so an alternative to probability sampling needed	Moderately high to reasonable	Relatively high
Purposive	Low, although dependent on researcher's choices:	Where working with very small samples	Reasonable	Reasonable
	extreme case	focus: unusual or special		
	heterogeneous	focus: key themes		
	homogeneous	focus: in-depth		
	critical case	focus: importance of case		
	typical case	focus: illustrative		
Snowball	Low, but cases will have characteristics desired	Where difficulties in identifying cases	Reasonable	Quite low
Self-selection	Low, but cases self-selected	Where exploratory research needed	Low	Low
Convenience	Very low	Where very little variation in population	Low	Low

Figure 6.7: Impack of various factors on choice of non-probability sampling techniques)

6.2.2.4 Self-selection sampling

Self-selection sampling occurs when you allow each case, usually individuals, to identify their desire to take part in the research. You therefore:

- Publicise your need for cases, either by advertising through appropriate media or by asking them to take part.
- Collect data from those who respond.

Publicity for convenience samples can take many forms. These include articles and advertisements in magazines that the population are likely to read, postings on appropriate Internet newsgroups and discussion groups, hyperlinks from other websites as well as letters or emails of invitation to colleagues and friends (Box 7.14). Cases that self-select often do so because of their feelings or opinions about the research question(s) or stated objectives.

6.2.2.5 Convenience sampling

Convenience sampling (or haphazard sampling) involves selecting haphazardly those cases that are easiest to obtain for your sample, such as the person interviewed at random in a shopping centre for a television programme or the book about entrepreneurship you find at the airport. The sample selection process is continued until your required sample size has been reached.

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