

Research This is it!

Guide to quantitative and
qualitative research

Ben Baarda

First edition



Research: this is it!

Guidelines for setting
up, doing and evaluating
quantitative and qualitative
research

Ben Baarda

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If you have any comments or queries about this or any other publication, please contact: Noordhoff Uitgevers bv, Afdeling Hoger Onderwijs, Antwoordnummer 13, 9700 VB Groningen, e-mail: info@noordhoff.nl

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Introduction

A life without research is unimaginable.

'Basic research is what I am doing when I don't know what I am doing.'
Wernher von Braun (1912–1977)



People usually associate research with nerdy investigators in laboratories getting excited about complicated matters. Few are aware that research is something that we do on a daily basis. If I mislay my key I start an investigation. I think back to where I might have left it, developing theories such as that I might have put it on my desk when I was packing up my things, and then I check whether the theory could be correct. Research is an integral part of our lives. Before we buy things like a laptop, one of the first things we usually do is look into what makes a laptop a good one, price being one of our main concerns. When we open up our daily newspaper we come face-to-face with research: look at the articles in this part – the scientific section – of a newspaper.

Science Times: Feb. 2, 2010

BASICS

Abstract Thoughts? The Body Takes Them Literally
By NATALIE ANGIER

Researchers have found that the body embodies abstractions the best way it knows how: physically.

- More Basics Columns »
- Post a Comment

Up in the Air, and Down, With a Twist
By HENRY FOUNTAIN

For aerialists with the United States Freestyle Ski Team, their high-flying feats are a matter of physics, and plenty of preparation.

INSIDE THE ACTION

VIDEO FEATURE: Aerial Skiing
United States Olympic aerialist Ryan St. Onge and science reporter Henry Fountain break down the "double full full full," a jump St. Onge may perform in Vancouver.

Saving Tiny Toads Without a Home
By CORNELIA DEAN

Conservationists who have worked for years to sustain the Kihansi spray toad are unsure it can survive if it is returned to the wild.

Science Columns

Q & A Meeting the Heat
By C. CLAIBORNE RAY

What causes hot flashes in menopausal women?







- More Q & A Columns »
- Health Guide: Menopause »

OBSERVATORY Why Asexual Organisms Are on Their Last Legs
By HENRY FOUNTAIN

One hypothesis is that asexual organisms have locked up their genome, while their pathogenic enemies are constantly evolving to defeat them.

OBSERVATORY How Seabirds Follow Fishing Boats' Routine
By HENRY FOUNTAIN

Researchers report that fishing-boat discards can affect seabirds' patterns of movement on large scales.

Source: <http://www.nytimes.com/pages/science/index.html>

The policies endorsed by government, the business sector and other organizations are often based on research. As such, research is part and parcel of our daily lives and is not limited to researchers. The difference between the sort of research that you do when we lose our key and research that we do for a government body is that the latter involves a more systematic approach and must conform to various demands. A government body will expect its researchers to deliver valid and reliable results. But what does this actually mean? This is what *Research: this is it!* is all about. What is good research? When can we consider research results to be reliable and valid?

MKB-NEDERLAND, APRIL 13 2006

Entrepreneurs are not making full use of ICT possibilities

As shown in research that MKB-Nederland [The Dutch Association of Small Businesses] commissioned TNS-NIPO to do, 75% of entrepreneurs are largely unaware of what ICT has to offer. Another finding is that 85%

of entrepreneurs are not making optimal use of modern ICT solutions.

[...]

Research is likely to form an ongoing part of your life both during your training and in the course of your future career. It may be research that you do personally or information that derives from somebody else's research, such as the research results in the above article that show that business entrepreneurs know too little about the opportunities offered by information technology.

Many of the textbooks you read will contain information that derives from research. The decisions you make will often be based on research results: they may, for example, relate to the best choice of treatment for your patients, or the type of management strategy that is best for your situation. Or you may decide to do your own research: for example, you might need to determine the main causes of sick leave in a particular business, or customer satisfaction.

This book is mainly concerned with simple applied research in practical situations: that is, research that focuses on obtaining information that may assist in resolving problems. Its focus is not on fundamental scientific research whose purpose is primarily the advancement of scientific knowledge. As such, this book is short and has a practical orientation. It does not provide any background information of a scientific nature. It does not deal with research traditions or with various scientific theories. It is first and foremost an aid for students who need to do research in their chosen career areas, either during their training or later. This book may be used to learn how to evaluate research. What things should you focus on in order to determine how good the research is? As well as this, the book can be used to help you write a research plan (the website contains examples of research estimates and planning schedules), and its checklists and information sources will assist you as you carry out your research.

TABLE 1 The four components of a research proposal

Chapter 1	What does the researcher want to find out and for what reason?
Chapter 2	Can the researcher's proposal deliver appropriate answers to the research question as it has been formulated, and has the research data been collected from individuals, organizations and other subjects that are representative of those individuals, organizations and other subjects that the researcher wants to make decisive comments about?
Chapter 3	Has the researcher collected the research data in an appropriate way? Is the researcher using the correct technique for collecting data and is he/she applying it appropriately?
Chapter 4	Has the researcher processed and analyzed the research data appropriately and has a valid conclusion been drawn and the research reported correctly?

This book will deal in turn with each of the four key issues shown in the table as requiring special attention. Good research depends on how well these issues are addressed and we will look at them one by one. As we do so, a sizable and detailed checklist will be generated. You will be able to use this checklist both in setting up and carrying out your own research as well as in evaluating research proposals and research reports. The checklist can also be found on the website www.research.noordhoff.nl

It is important to realize that in general terms, research falls into two main types: quantitative and qualitative research. Quantitative research is based on figures (the term says it all). An example of a quantitative research finding would be that 70% of students occasionally download music from the Internet. Qualitative research generally works with texts – typed-out interview reports, for example – rather than figures. You might ask students what they think of their studies and on the basis of this find out what criteria students use to evaluate their courses. What things are regarded as important when it comes to study? Qualitative research derives from a different research tradition to that of quantitative research, and it encompasses various different schools of thought. My choice of method has necessarily been pragmatic, based on which particular research questions are best approached quantitatively and which qualitatively.

In this book I have chosen not to deal with each type of research separately but jointly. The reason is that they have some important elements in common and both are characterized by more or less the same division into stages, though for qualitative research the division is less rigid than it is for quantitative research. Qualitative research is more exploratory in nature and the path it takes is less pre-ordained. Qualitative researchers are sure to accuse me of presenting qualitative research in much too simplistic a light. They would be right, but I have had to make this concession in order to bring both quantitative and qualitative research into the book. I have had to impose limits on what I have included, focusing in particular on those qualitative techniques that are in relatively frequent use but often only dealing with them summarily. For more in-depth knowledge I often refer to websites, particularly in relation to qualitative research but also for more advanced types of quantitative research.

When I want to make it clear that qualitative research is being referred to, the margin stripe will be **green**. When the form of research is specifically quantitative, the margin stripe will be **blue**. Where there is no margin stripe, the information given applies to both quantitative and qualitative research.

I have livened up the various aspects of the process of planning and carrying out research by including some actual examples taken from various fields, allowing myself to be inspired by practical research issues: issues that I have encountered in the training sessions in research techniques that I hold for various different professional groups. As such, you may find some examples that are particularly pertinent to your situation. If you would like to know more about the examples referred to, go to the website that is linked to this book. You will usually find comprehensive research reports relating to the examples in question, including the websites they relate to. The examples have also been chosen for their relevance to students: downloading music, for example. They have the advantage that they can be adapted to other situations.

The reference list makes intentional use of information to be found on the Internet, the idea being that where possible, you will go about planning and carrying out your research from behind your computer, even if you are doing an internship within a small company or organization that does not have advanced programs at its disposal or are doing your internship outside the country. It is for this reason that I have elected to use not only SPSS, an advanced statistical program, but also Excel, which virtually every computer

has on it. The SurveyMonkey program is used for carrying out web-based surveys. It is an inexpensive program and is universally accessible. For more in-depth information about certain subjects – specific forms of research, for example – the reader is usually referred to websites, which has the advantage that the information will remain accessible.

This book is so structured that it follows the progress of a piece of research, starting with defining the research problem and finishing with the reporting.

You will find some support material on the website www.research.noordhoff.nl. Not only will it refer you to some useful websites, but it also contains articles on the examples that are referred to in the book, forms for research estimates and planning schedules, a model for a research proposal and some examples of how to set up your research. You will also find shortened versions of Excel and SPSS manuals, including the data files that are used for the examples in this book. The number on the card that accompanies this book will give you access to this site.

I would like to thank my colleagues Karel Mulderij, Henk van Goor and John Schostak for reading the provisional text of this book and particularly for the many useful suggestions they have made.

I wish you all the best as you go about setting up, carrying out and evaluating your research, and I hope that the book appeals to you.

The Hague, spring 2010

Ben Baarda



1

What does the researcher want to find out?

2 Is the researcher's research strategy suitable for answering the research question?

3 Is the researcher's data collection method appropriate?

4 Has the researcher analyzed the data properly and reported on it appropriately?

Chapter 1 will address the following:

- 1.1 What is the research problem and the research question, and what are the researcher's objectives?
- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?
- 1.3 What issues does the researcher want to discuss? Research units and constructs.
- 1.4 What is already known in relation to the research topic? Deciding on content.
- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?
- 1.6 Is the research feasible?

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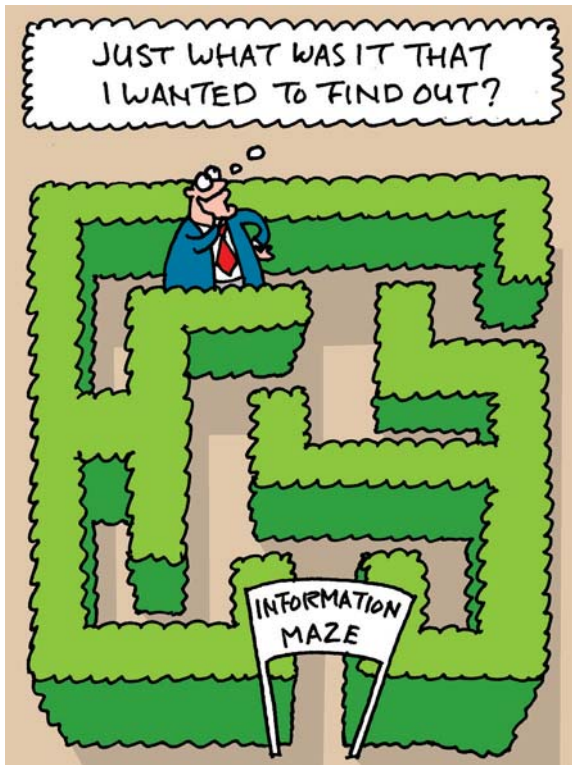
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1.1 What is the research problem and the research question, and what are the researcher's objectives?

- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?
- 1.3 What issues does the researcher want to discuss? Research units and constructs.
- 1.4 What is already known in relation to the research topic? Deciding on content.
- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?
- 1.6 Is the research feasible?

We sometimes find ourselves confronted by problems that we cannot find a way of resolving. They may be personal issues, issues affecting organizations or maybe social issues. To resolve them requires information. When you write a proposal outlining how a piece of research will be set up and when you report on your completed research you will start by outlining what is known as the *research problem*. In the following article from a scientific journal, the problem is the increasing rate of obesity among children: a social problem, therefore. But the problem might just as well be that an organization is faced with falling sales figures, a head of a government department has a high percentage of staff sick leave or a residential area has rising criminality within its boundaries. In all of these

situations, information is needed if the problem is to be resolved. In situations like these, the researcher's job is to collect the right information. Others can then use that information to devise and implement a solution. If the researcher in the example is indeed able to demonstrate that television advertising leads to a greater rate of obesity among children, the government can undertake steps to restrict such advertising.

PSYCHOLOGIE EN GEZONDHEID, 35 (2007), MONIEK BUIJZEN, JORIS SCHUURMAN & ELISE BOMHOF, P. 66–75

The link between television advertising of foodstuffs and food consumption tendencies among children

In recent years, the problem of obesity among children has attracted increasing public, political and scientific attention. In the discussion surrounding the increasing and disturbing rate of obesity, the finger of blame is increasingly being pointed at television advertising. Critics are holding advertising responsible, with its copious promotion of so-called high energy products: foodstuffs that are relatively high in fat, sugar and salt (Hastings et al., 2003;

Matthews, Cowburn, Rayner, Longfield & Powell, 2004; Schor, 2005). As a consequence, organizations such as the World Health Organization, Consumer Affairs and the Heart Foundation are calling for limitations or even a ban on foodstuff advertising directed at children ... despite the fact that that there is uncertainty about whether advertising really does lead to unhealthy eating patterns.

In your research report and research plan it is important that you *outline the background to your research*. Where did your idea come from? What is it based on? The reader needs to know your reasons for doing the research. The journal article makes it clear that research can play a role in resolving a social problem, namely the problem of childhood obesity. Your desired goal is termed the research objective. In our journal example on advertising and childhood obesity, the research objective is only stated implicitly: it has to be deduced. It is preferable to state it explicitly. In the article we are using as our example, the research objective could be put as follows: to contribute to our understanding of the causes of childhood obesity and so contribute to a lessening of the problem.

Be very wary, though: those who have commissioned the research – be it a government body or an organization – may want you, the researcher, to come up with ready-made solutions. This is not your job. Take the example of students dropping out of their courses. A government body may want you to come up with a solution to the problem. As a researcher, it is not up to you to provide that solution or to come up with one. What you *can* do is find out the reasons for students dropping out. On the basis of your research results the government body in question may be able to make better decisions about how to limit students dropping out. As a researcher, your

**Research
objective**

job is to supply information that others can use to detect problems and resolve them. The researchers who wrote the article may come to the conclusion that advertising with a focus on children may lead to obesity among children. Here, too, it is the task of policy makers rather than the researcher to find a solution to the problem.

The same applies to market research. If a manufacturer asks a researcher to find out how he can increase his market share, this is a policy decision issue, not a *research question*. A research question would be to what extent consumers are familiar with that manufacturer's product. The researcher *will* be able to provide a definitive answer to that question. If the research shows that the consumer hardly knows the product, it will then be up to the marketing department to think up ways of giving that product more prominence. *Applied research*, however, must always have the objective of providing more than data and/or information. To return to the example, it would be inadequate if the researchers merely indicated that they wished to investigate the link between television advertising of foodstuffs and children's eating patterns. With applied research, it is important to indicate what the purpose of collecting the information is. What do you want to achieve by collecting it? The collection of data alone is one of the characteristics of *pure scientific research*. We will treat this in greater detail in Section 4.3., which deals with reporting.

A research plan and research report should always start with an introduction. The introduction to a research proposal and a research report should always conclude with at least one *research question*. After outlining the nature and extent of the problem of childhood obesity and the possible role of television advertising in it, the researchers will round off their introduction with the research question: is there a relationship between being exposed to advertising of unhealthy foodstuffs and the consumption of these foodstuffs by children? Make sure that the research question *really is a question*. The research must provide an answer or answers to that question or those questions. To avoid disappointment and misunderstanding, it is important to be precise in the way you formulate the research question. As a rule, it is wise to start out by *formulating the question in broad terms, then refining it*. This is how it is done in our example: the researchers start out by defining the issue of childhood obesity in broad terms and finish up much less broadly with the research question of whether there is a link between exposure to advertising of unhealthy products and consumption of those products by children. In your introduction you should also proceed from broad to close terms, refining them until you have the research question you want to find an answer to. *Formulating the research question is often a process of trial and error and can involve a lot of work*. You may find yourself making various versions before you come up with a definitive research question. It is also important to confer closely with those who have commissioned the research (if applicable). After all, they will have to be in agreement with your definitive research question or else you will have a problem. How awkward it would be if your research came up with results that were completely unexpected, that were not relevant or even worse, results that those who commissioned the research would not want to hear. Let's say your research suggested that the sick leave among staff members was correlated to managerial style. The department's managers are unlikely to be happy with these findings.

Research question

Applied research

Scientific research

If the research has been *commissioned*, do make sure that there is clear agreement about what exactly your research question is. In the arrangement that you make with the commissioning party, make sure you pay heed to *research ethics*. As a rule, you should only embark on research if you can answer the following questions in the affirmative:

- Will the respondents be taking part in the research voluntarily?
- Will the respondents be fully informed in advance of the purpose of the research and the method used?
- Will the data obtained from the respondents be confidential and preferably anonymously processed?
- Can you ensure that the research will have no negative consequences for the respondents?
- Will the research be conducted in an honest and objective fashion?

You can find more information about good research ethics on the websites of professional organizations for researchers, such as the website for market researchers (www.esomar.org).

Checklist 1.1 Formulating the research problem, research objectives and research question

- What problem prompted the research?
- For what purpose is the research being carried out?
- What is the research question?
- Is the research ethical?

- 1.1 What is the research problem and the research question, and what are the researcher's objectives?

1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?

- 1.3 What issues does the researcher want to discuss? Research units and constructs.
- 1.4 What is already known in relation to the research topic? Deciding on content.
- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?
- 1.6 Is the research feasible?

The following article deals with research into difficulties experienced by people with physical disabilities when they use stairs.

Tijdschrift voor Ergonomie, 30, NUMBER 3, JUNE 2005

The Stairways Lab: (re)designing fixed stairs in homes

A final assignment given to students doing occupational therapy involves putting together a set of requirements for fixed stairs in homes. These stairs must conform to accessibility, health, safety and comfort standards as they apply to people with physical limitations as well as to the physically able. An ethnographic and observational study was carried out in order to gain insight into the way in which people with physical disabilities cope with stairs in their own homes. The data

obtained was analyzed with a view to finding trouble spots. After consideration of the relative importance of each factor, a set of requirements and desirable changes was formulated. The set of requirements was checked against existing legislation. The importance of walking up and down stairs as a health-promoting activity and as a positive contributing factor in the fight against too little physical activity was highlighted. The study concluded with recommendations for follow-up research.

In the article on the stairways lab, the researchers are interested in finding out about stair use among those with physical limitations. For example, how do those who cannot walk properly go up the stairs? The purpose of this research will be apparent: collecting data relevant to designing stairways that are suitable for use by those with physical limitations. The researchers start out without any preconceptions. They get people with physical limitations to go up and down stairs and they make observations. They have no preconceived ideas about what they will find, and consequently have no lists of points to check against.

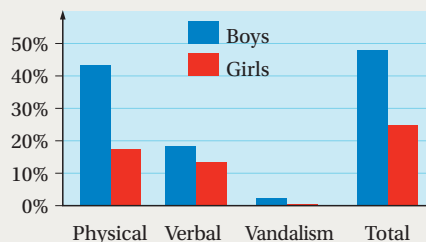
In the following investigation into aggressive behaviour in schools, the researchers do know what they can expect. They already know that aggression takes various forms: physical and verbal aggression and vandalism. They will have identified kicking, for example, as a form of physical aggression. Unlike the staircase researchers, they can draw up observational diagrams consisting of pre-identified categories.

Classifying aggression (Part 1)

[...]

Using a list of the most frequently occurring forms of aggression among children, teachers and class supervisors noted the forms of aggressive behaviour that occurred in their classes. Using this approach, data was collected in respect of 876 children, representing 38% of all children in the northern precinct of the city of Groningen between the ages of 3 and 12.

Types of aggression according to gender



Source: <http://www.intraval.nl/>

In the first piece of research – into stairs and their usage – there was an *open-ended research question*, while in the second piece of research, there was a *fixed research question*: it could be paraphrased as ‘how frequently does physical and verbal aggression as well as vandalism occur among children, and what gender differences in relation to aggressive behaviour are to be found?’. It is important to make a distinction between both forms of research question because they each require a different research approach.

With an open research question, *qualitative research* is required. The research question will usually be broad and there will be little prior knowledge. As a consequence, you will rarely have set question or observational lists on which to base your research. You will leave it up to your respondent to provoke new ideas or provide new insights, which will help you generate questions or draw your attention to matters that you have not previously considered. Qualitative research is primarily concerned with obtaining *insights* rather than hard data with a solid statistical basis. Consequently, a qualitative research report will consist primarily of description and will contain virtually no tables or diagrams.

With qualitative research, the basis of the analysis is a transcription of conversations or observational reports. Photos and videos may also be included. The following photo taken from the Stairway Lab research clearly demonstrates the importance of a good stair rail. It is difficult to make clear how important such a rail is in any way other than via a photo. You can hardly describe it in the form of statistics.



An example of a stair rail that is inadequate to its purpose (photo taken from the Stairway Lab research)

Open-ended
research
question
Fixed research
question

Qualitative
research

Qualitative research

It is obvious that qualitative research will require different *analysis techniques* to those used in quantitative research. There are various ways of analysing qualitative data, and I will deal with these in greater detail in section 4.2, also giving some examples of qualitative analyses. It needs to be said that there is some difference of opinion about what constitutes *qualitative research*. The QualPage website (<http://qualitativeresearch.uga.edu/QualPage/>) will give you a useful overview of various types of qualitative research. The approach that I use here is quite a narrow one in the sense that it involves you as researcher being completely open to whatever you encounter in your research field: you want to learn about whatever it is you are researching. I do not regard researchers who go around with structured observational lists and use them to observe how a lady uses stairs as performing qualitative research. After all, such research must already have had something in mind or else an observational list would not be required. Having a list more or less presupposes that the researcher wants to find out whether a certain idea is correct. As I see it, the researcher needs to find out from the lady in the photo what difficulties she encounters when she uses the stairs. The researcher needs to be as open as possible and be prepared for the unexpected, though criticism of this approach on the basis that one can never be completely free of preconceptions does have some justification. After all, with qualitative research you, the researcher, are the main research instrument, and by virtue of being human you can never be completely free of preconceptions. Section 4.2.3 will deal in greater detail with checking the validity of qualitative research material.

Quantitative research

In the example of research into aggression, the research question is relatively closely defined and a lot of prior knowledge is available: there has been a lot of research into aggressive behaviour among children. If the research question is relatively narrow and you know you can expect when you start interviewing or observing, your best choice is *quantitative research* since if you are doing a survey (for example), this type of research involves putting the same questions to all of your respondents and consequently you must know in advance what questions you intend to put and often even the answers that you can expect. As the term suggests, the research data will consist of figures, usually in the form of a data matrix (see section 4.1.1) that can often be analyzed with the aid of statistical software such as Excel or SPSS. In the example of research into aggressive behaviour among primary school children, as you will have seen, the data was presented in the form of a bar chart.

You may well be wondering how relevant quantitative research is if you more or less know beforehand what you are going to find. The point is that with quantitative research, the crucial thing is not only whether there is a relationship between (for example) RSI-related complaints and the amount of work a person performs behind the computer but also the strength of that connection. If 80% of RSI complaints can be attributed to the amount of computer work performed, then it is obvious that here is a way of tackling RSI-related complaints. However, if 30% of respondents attribute their RSI complaints to the amount of computer work performed then you will need to go in search of other factors that might explain the incidence of RSI.

The differences between qualitative and quantitative research are summarized in Table 1.1.

TABLE 1.1 Overview of quantitative and qualitative research characteristics and differences

The choice of whether to perform quantitative as against qualitative research is primarily related to the research question

Quantitative	Qualitative
A <i>fixed</i> research question: e.g., how satisfied are students with their course or parts of it?	An <i>open-ended</i> research question: e.g., what improvements to the course would the student like to see?
The research question is pre-established.	The research question may be adapted during the course of the research.
The primary objective is outlining and testing ideas that have already been proposed.	The primary objective is developing new hypotheses.
Data is collected in set ways (e.g., via a questionnaire).	There are no set ways of collecting data, though participant studies and open interviews are common.
The data collected is in the form of statistics (a data matrix).	The data collected may be in the form of reports on observational studies and interviews, for example.
The data is evaluated using statistical analyses.	Reports on observational studies and interviews are usually reduced to label form initially, after which the researcher tries to find common patterns.

Whether quantitative or qualitative research is involved, it is important to be able to establish how the researcher reached his or her conclusions. The formal term for this is *verification*. It is somewhat easier to do in relation to quantitative research than it is for qualitative research.

For quantitative research, whether the research can be *replicated* is the crucial factor. You must be able to report on your research in such a way that another person would be able to repeat the research. It must be clear how you got in touch with your respondents, what research instruments you employed and so on.

For qualitative research, this may be rather more difficult, particularly if the research methods have been open observational studies and interviews, since no single observational study or interview will have been the same. Despite this, you, as qualitative researcher, must be able to demonstrate how you reached your conclusions: those conclusions must be *plausible* and your work methods must be *transparent*. Qualitative researchers often supplement their research reports with their interview and observational reports and in the main text they give examples of how they have analyzed these reports.

Verification

Checklist 1.2 Open-ended or closed question: qualitative or quantitative research?

- Is the research question an open-ended or a fixed one?
- Is the research strategy you have elected to use, be it a quantitative or a qualitative strategy, suitable for the research question?

- 1.1 What is the research problem and the research question, and what are the researcher's objectives?
- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?

1.3 What issues does the researcher want to discuss? Research units and constructs.

- 1.4 What is already known in relation to the research topic? Deciding on content.
- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?
- 1.6 Is the research feasible?

Your research is always likely to be about topics that involve discussing individuals, situations, organizations, schools and so on. If your research question is 'How frequent are complaints associated with fatigue among students?' you will be discussing a student population. If your research question is 'Is the amount of sick leave higher in government departments than it is in non-government departments?' then you will be discussing organizations. The individuals, organizations, situations and so on that you want to discuss are termed your *research units*. It is important that you consider the issue of what you want to discuss, or in other words, what your research unit is going to be. In doing so you will be establishing what it is that you are presuming to make a *generalization* about. To whom or what will your research results apply when you present them? Researchers are inclined to be somewhat imprecise about describing their research units and consequently, it may not be clear to whom or what the research results apply. Referring back to the example of symptoms of fatigue among students, Dutch students are presumably being referred to. But what particular student population? Is it inclusive of senior secondary vocational students and those following advanced professional courses as well as university students? Does it include part-time as well as full-time students? Are only students under a certain age included or are mature-age students – say, those over 30 – also included? As I hope this example makes clear, despite its importance, defining your *population* – the sum of your units – can be a complex matter. To take an example, if you were to include part-time students in your research, the symptoms of fatigue might well be caused by other factors unrelated to study: they may be job-related rather than study related.

With the research question of whether boys are more aggressive than girls, the research unit is not immediately obvious. Sometimes *the research unit is concealed within the research question*. In this example, the units are not confined to either boys or girls but include all children or young people, depending on the age of the group that you want to discuss. That group's gender is a quality of the unit: the girls and boys that that make up the units. As this example shows, as well as research units, we can also have a *quality* or a *construct*. In the research into fatigue among students, complaints about fatigue constitute the quality. In the research into differences in sick leave rates among government employees as against those in non-government companies, the companies that form the research units are presumably Dutch companies. The quality that the researcher intends to measure is sick leave and whether there is a higher rate of it within government than non-government organizations.

Research units

Generalization

Population

Quality
Construct



TIP!!! CREATE A DATA MATRIX BEFORE YOU START YOUR QUANTITATIVE RESEARCH.

To make sure you know what your research units are, it is a good idea to start out by doing a preliminary design of your data matrix. If your research is into symptoms of fatigue among students, your data matrix may look like the following:

	Mental fatigue complaints	Physical fatigue complaints	Age	Gender
Student 1	Yes	Yes	20	Male
Student 2	No	No	19	Female
Student 3	...			
...				

The rows (i.e., the horizontal lines) should show the research units: in this case, students. The constructs: in this case, mental and physical fatigue, age and gender, should be shown in the columns.

The problem sometimes occurs of constructs not being relevant to particular research units. Take the example of research into the issue of sick leave within organizations. In this case, the research unit is organizations and the constructs include whether the organization is a government one or not, and sick leave. However, sick leave is, in fact, an employee construct. By taking the average sick leave within the organization it becomes an organizational construct and the problem is resolved. You will often only realize this when you draw up a data matrix, hence the suggestion to draw up a data matrix before you start your research.

With qualitative research, constructs are often less apparent than with quantitative research. Sometimes research itself is needed to isolate important constructs. Nevertheless, you will never have to start completely from scratch. With the research into the problems that people with physical limitations experience in walking up and down stairs, you know that it is about stairs. The researcher probably has a particular type of staircase already in mind. Indeed, the research confirms this: the researcher is focussing on staircases in private homes. But even in this instance, you may very well question whether you should focus solely on internal staircases or include staircases that provide entry to apartment buildings. With qualitative research too, it is important that you, the researcher, make it clear who or what you are presuming to discuss. One difference with quantitative research is, of course, that that presumption can be changed. You might, for example, decide that it is wiser to focus particularly on staircases in houses that were built within the last fifty years and accept that as a limitation.



TIP!!! TRY NOT TO START OUT TOO BROADLY WHEN YOU ARE DOING QUALITATIVE RESEARCH

If you want to find out what it means to an adult to have been abused or maltreated as a child, even with qualitative research it is wise to restrict your research question. For example, you could start with sexual abuse and base it on women who are now between 20 and 30 years of age. As soon as you have a clear picture of how this has affected these women, you could consider including women who are somewhat older and are likely to be going through a different stage of life. You could then investigate whether your findings in relation to the younger group – those between 20 and 30 – also applies to women who are older. As soon as you have the feeling that you understand what it means for adults to have been sexually abused you could extend your investigation to include maltreatment in general and its effect on people when they reach adulthood. By taking such an approach you will not run the risk of ending up with a mountain of data with no clear line to it because the problem that you are investigating is too complex and/or the group that you are investigating is not homogenous enough.

Checklist 1.3 What does the researcher want to discuss? Research units and constructs

- What are the research units? That is, who or what is your target group?
- What are the units' constructs? That is, what topics do you want to discuss?

- 1.1 What is the research problem and the research question, and what are the researcher's objectives?
- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?
- 1.3 What issues does the researcher want to discuss? Units and properties.

1.4 What is already known in relation to the research topic? Deciding on content.

- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?
- 1.6 Is the research feasible?

The process of formulating useful research questions is usually preceded by a long period of deliberation. Initially, you will usually find that you have a vague and global idea that you progressively make more specific and more detailed. The idea becomes more concrete, and with this, more able to be investigated. When you are asked to do some research into a particular issue, your first move should be to get a *general overview* of the issue. You should confer with colleagues and with the person commissioning the research and see what you can find on the Internet and in the literature on the subject before you move towards a more or less definitive formulation of the research question. You will often find yourself making a number of

preliminary formulations before you settle on a definite research question. Even then, you may very well change it.

Formulating an apparently simple question will usually turn out to be more complicated than you originally expected. The question ‘How frequent are RSI complaints within our organization?’ is a good example of this. What are RSI-related complaints and how do you establish whether people have them? If you did a survey and asked the employees whether they sometimes experienced pain when they used a computer mouse or had difficulty manipulating it, quite a lot of employees would be likely to remember having had such experiences. If you used people calling in sick as your basis you are likely to get too low a figure, since RSI-related complaints are not always registered. Nor can you actually see RSI-related complaints, and this in itself can cause a problem. You will have to probe your respondents, but then you will be bringing in a subjective element again: everybody reacts differently to pain.

One obvious approach is to do an extensive preliminary study: in this case, into RSI-related complaints and in particular, how you gauge them. Using the results of such a study, you could give the person commissioning the research a preliminary formulation of the research question. Sometimes it is also wise to do a *qualitative preliminary investigation* first. Imagine that you are asked to investigate the fact that in some departments of a department store sales are much lower than in other departments, while in another comparable department store there are no such differences. The question is why some departments have sales figures that are much lower than would be expected. With a research question of this nature, it would be sensible to firstly take a look at the departments in question, or perhaps even to spend some time working in those departments. If you happen to notice that employees in departments that are performing well are much more positive about those in charge, you may find that performance level is related to managerial style. You could then set up a quantitative investigation to test whether there is indeed a connection between managerial style and staff performance.

Qualitative
preliminary
investigation

There will often be no need to do a preliminary investigation, though it is wise to do a *literature search* before you start drawing up your research proposal, not least because the research that you intend doing may already have been done by others. Nothing could be more painful than to discover that others have already done the same research as yours. But even if you cannot find evidence of *comparable* research, it is wise to firstly do a search of the literature and to look at the Internet to check that there has not been research that is allied to your research. There are three reasons for this:

Literature
search

- 1 To *define your constructs* and gauge them. Prior research can show you how others have *defined* the constructs that you want to research and in particular, *what measuring techniques have been used*. Those researching symptoms of fatigue among students would find it useful to know that there has been recent research into fatigue among secondary school students. In it, the construct of symptoms of fatigue was clearly defined. In the research they also used an instrument for measuring fatigue that has been used in a lot of other research. They also indicated what the characteristics of chronic fatigue are. If you want to set up and perform

some research into symptoms of fatigue among students, information of this sort is, of course, highly relevant.

- 2 *Methodological aspects.* It is also useful to read about how other researchers have set up and performed research of a similar type, and in particular, what their experiences have been. There is even a dedicated site where you can find information relating to the *methodological aspects* of previously performed sociological research (www.srm-online.nl).
- 3 *Theory.* If you are looking for a *theory* to explain the phenomena you intend to research, do make sure that you also research your sources. To go back to the research into symptoms of fatigue among secondary students, it would seem that they have much less to do with lifestyle than previously thought and much more to do with personality factors such as anxiety and depression. This is, naturally, a point that the researchers into symptoms of fatigue among students should include in their research.

Search terms or keywords

When you start *investigating your sources* it is crucial that you use the right *search terms or keywords*. Avoid limiting yourself to a single construct: try out a number of different ones. If you are doing research into fatigue-related complaints, try the terms ‘tiredness’ and ‘exhaustion’ as well. You could try looking at *similar terms* in a dictionary or thesaurus (you will find many online). A *thesaurus* is a type of dictionary in which you can look up various concepts and find more or less comparable ones. In the *Thesaurus.com*, for example, you will also find the concept of ‘burnout.’ You can also consult online *specialized dictionaries*: use the search term ‘a web of on-line dictionaries.’

Thesaurus

You should also find good translations for your keyword. If you type in ‘fatigue’ in *Hyperdictionary* it will come up as an acceptable keyword, and as well, some similar terms are given, including ‘burnout’ and ‘exhaustion.’ If you think that you have found the right keywords or search term, the obvious next step is to do an Internet search. But you should not restrict yourself to the Internet: take a look at specialized *libraries* and *bookshops*. Books and magazines are often arranged according to subject, and you may find some unexpected ones that are also relevant to your research.

Search engines

If you do an Internet search, you will obviously start with big *general search engines* such as Google and Yahoo. Typing in the search term ‘fatigue’ is likely to bring up a lot of irrelevant references: for example, to a site where peppermint oil is recommended as a remedy against fatigue. It is preferable to refer to sites that contain primarily scientific literature: for example, the Scholar versions of Google, Scirus and Pubmed.

The screenshot shows the Google Scholar search interface. The search bar contains the word 'fatigue'. Below the search bar, there are filters for 'Articles and patents', 'anytime', and 'include citations'. The search results are displayed in a list format, with each entry including a title, authors, journal information, a brief abstract, and citation information.

The chronic fatigue syndrome: a comprehensive approach to its definition ...
 K Fukuda, SE Straus, I Hickie, MC ... - *Annals of Internal Medicine*, 1994 - *Am Coll Physicians*
 The complexities of the chronic **fatigue** syndrome and the methodologic problems associated with its study indicate the need for a comprehensive, systematic, and integrated approach to the evaluation, classification, and study of persons with this condition and other fatiguing ...
 Cited by 2223 - [Related articles](#) - [BL Direct](#) - [All 5 versions](#)

Fatigue-free ferroelectric capacitors with platinum electrodes
 CAPAZ De Araujo, JD Cuchiari, LD McMillan, MC ... - 1995 - *nature.com*
 A SIGNIFICANT fraction of the computer memory industry is at present involved in the manufacture of non-volatile memory devices 1—that is, devices which retain information when power is interrupted. For such applications (and also for volatile memories), the use of capacitors ...
 Cited by 1430 - [Related articles](#) - [BL Direct](#) - [All 6 versions](#)

The fatigue severity scale: application to patients with multiple sclerosis and ...
 LB Krupp, NG LaRocca, J Muir-Nash, ... - *Archives of ...*, 1989 - *archneur.highwire.org*
Fatigue is a prominent disabling symptom in a variety of medical and neurologic disorders. To facilitate research in this area, we developed a **fatigue** severity scale, subjected it to tests of internal consistency and validity, and used it to compare **fatigue** in two ...
 Cited by 1042 - [Related articles](#) - [All 5 versions](#)

The chronic fatigue syndrome
 GP Holmes - *Current Opinion in Infectious Diseases*, 1991 - *journals.lww.com*
 616 Generalized infections logic abnormalities vary widely among published studies. Read et al. [11] noted that patients with CFS symptoms following acute viral illnesses were more likely to have episodic symptoms, elevated T-lymphocyte levels, and subsequent ...
 Cited by 1270 - [Related articles](#) - [All 4 versions](#)

Search results for 'fatigue' using *Google Scholar*

The good thing about Google Scholar is that it not only shows articles and references, but if you have found a relevant article, it will also refer you to similar articles. It also indicates who has quoted the article, and thus can prompt further searches. You can even search forward and find the most recent articles. It would appear, for example, that the scale used to determine fatigue that Krupp et al refer to in a 1989 publication also appears in a 2005 publication by MacAllister et al. Google Scholar was able to discover that Krupp was referred to in the literature list of the MacAllister et al article.



TIP!!! MAKE ADDITIONAL USE OF THE SEARCH TERMS 'RESEARCH' AND 'REVIEW'

If you only use 'fatigue' as a search term you will get a lot of references that are not relevant to your research. If you add the search term 'research', you stand a greater chance of obtaining references to research, and by also including the search term 'review' you will find mainly overview articles which discuss various bits of research.

'Fatigue' alone as a search term produced nearly 45,000,000 hits. The addition of 'research' brought that figure down to 4,500,000, and after adding 'review', it was further reduced to 2,000,000. By using Google's 'advanced search' option and limiting the search to those sites which had been looked at within the past six months, the figure could be brought down to 1,000,000 references, including a lot of relevant ones.

Theses

As previously mentioned, *books* and in particular, *theses*, can provide interesting material. Theses usually provide useful literature lists on the topic dealt with in the thesis. Dutch theses can be found on DAREnet. Make sure you use English search terms in addition to Dutch ones. Many theses are currently written in English. You can often download theses from DAREnet and so you can read them directly. Moreover, DAREnet forms part of NARCIS, which will refer you to many more Dutch scientific publications. An international theses website is www.dissertation.com.

The screenshot shows the DAREnet search results for the term 'fatigue'. The search bar contains 'fatigue' and the results are sorted by 'meest recente' (most recent). There are four results listed:

- Symptoms in Inflammatory Bowel Disease: pathophysiologic aspects and their relation with disease activity**
2007-10-18 Middelhoude, I.M.
Symptoms in Inflammatory Bowel Disease: pathophysiologic aspects and their relation with disease activity Inflammatory bowel disease (IBD) comprises ulcerative colitis (UC) and Crohn's disease (CD). IBD patients frequently complain of fatigue, and a substantial proportion of the patients have gastrointestinal symptoms, resembling...
- Severe fatigue in adolescents : psychological, neuro-endocrine, and immunological characteristics**
2007-05-28 Wolbeek, M. ter.
Fatigue is a common complaint among adolescents. In a pilot study, we observed 8% of healthy adolescents to report fatigue severity which was comparable to fatigue severity reported by chronic fatigue syndrome (CFS) patients. This observation led to an extensive investigation on psychological, neuro-endocrine, and immunological...
- High strength fibre reinforced concrete: static and fatigue behaviour in bending**
2007-06-29 Lappa, E. S.
Recently, a number of high strength and ultra high strength steel fibre concretes have been developed. Since these materials seem very suitable for structures that might be prone to fatigue failure, such as bridge decks, the understanding of the static and fatigue bending behaviour is vital. In order to evaluate the bending behaviour of...
- Sick with burnout : clarified through electronic diaries**
2007-06-18 Sporenscheen, M.A.
The primary aim of this thesis is to enlarge our understanding of severe or clinical burnout through an extensive study on the actual functioning in daily life of burned-out individuals. Burnout is a fairly recent but common work-related health problem. About 20% of employees suffers from mild burnout symptoms and an additional...

Search results for 'fatigue' using DAREnet

Another site you could refer to is Google Books and is specifically for books. The site allows you to view parts of books and so it allows you to see whether a particular book is relevant to your research.



TIP!!! KEEP A LOGBOOK

When you are looking for information, keep a logbook. For example, you could create a Word file and every time you find something that is relevant you make a note of both the content (including the topic or part that is of particular relevance to your research) as well as the exact details for reference purposes. Failure to do this may mean that you may soon not be able to see the wood for the trees.

The screenshot shows a Google Books search result for the term "fatigue measurement". The search is performed within the book "Fatigue as a window to the brain" by John DeLuca. The search results show that "fatigue measurement" appears 34 times in the book, with the current page (Page 25) displaying the 6th result. The preview text on the page discusses the assessment and measurement of fatigue, mentioning a scale from 0 to 10 (Category Ratio Scale) and its correlation with heart rate and physiological factors. It also mentions Borg's scale and VAS scales.

Search results in Google Books

Do make sure that when you refer to the literature in your research report, you adhere to the rules that apply to your particular discipline. Your particular literature can be consulted with this purpose in mind.

Checklist 1.4 What is already known in relation to the research topic? Deciding on content

- Is a preliminary investigation necessary?
- Have you referred to relevant recent literature? You need to have found answers to the following:
 - Has this research already been performed by others?
 - How have other researchers set up research of a similar kind?
 - How have other researchers defined and measured comparable constructs?
 - How have other researchers made use of theories to elucidate comparable phenomena?
- Have you used appropriate search terms?
- Have you consulted appropriate sources and documents (and not only the Oxford Dictionary or Wikipedia)?
- Have you consulted books, reports and journals in addition to websites?
- Have you referenced your sources correctly?



- 1.1 What is the research problem and the research question, and what are the researcher's objectives?
- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?
- 1.3 What issues does the researcher want to discuss? Units and properties.
- 1.4 What is already known in relation to the research topic? Deciding on content.

1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?

- 1.6 Is the research feasible?

From the examples that have been used, you will have deduced that research questions can vary considerably in nature. In general, research can take one of the following forms:

- Descriptive research
- Exploratory research
- Hypothesis-testing research

Descriptive research

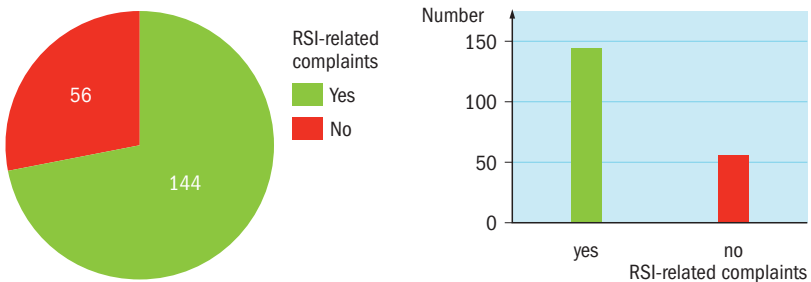
Descriptive research

Quantitative descriptive research is usually about *frequency issues*. For example, you may want to find out how many students have RSI-related problems. You could approach this by ringing, writing to or emailing a number of students in tertiary colleges and universities and asking them if they sometimes experience physical complaints or pain when they type on a computer keyboard, and if so, when was this, how serious was it and so on. You could then add up how many students compared to the total number are (or have been) affected to at least some degree. Your research result will most likely take the form of a table, a pie chart or a histogram (see Table 1.2, Fig. 1.1 and section 4.1.2).

TABLE 1.2 Number of students claiming to have (or have had) physical problems as a result of computer use (n = 200)

	Number	Percentage
Yes	144	72
No	56	28

FIGURE 1.1 Pie chart diagram (left) and bar chart (right) showing number of students who have had RSI-related complaints at some stage



The fact that approximately 70% of students have had RSI-related complaints at some stage, including about 15% with serious complaints, says something about the *seriousness* and the *extent* of the problem, though not very much about the *nature* and *relevancy* of the problem. Significance is best investigated by means of a *qualitative case study*. You could go about this by doing a number of in-depths interviews with a couple of students who are suffering from serious RSI. These interviews should aim to illustrate what consequences the complaints have had (and in particular, how the students have experienced these problems personally) and how they are coping with them. For example, how are they resolving the problem of not being able to do any assignments and how are they managing the pain? These students' stories ought to provide a good picture of the nature and the significance of the problem: something that is difficult to reproduce in the form of a table.

Case study

1

Exploratory research

To discover what the cause of RSI-related complaints is you will need to do some exploratory research.

If you have absolutely no idea what might be causing RSI-related complaints, it is wise to start with *qualitative exploratory research*. You could begin by sitting in on a computer class. This may bring up some ideas. For example, you might notice that students rarely sit up straight behind their computer, especially because they are inclined to sit in groups of two or three. Additionally, you could hold open interviews with students. This might provide you with the information that students rarely have breaks when they are sitting behind a computer, sometimes working for hours on end on an assignment. You may also observe that students often work on laptops, whose keyboards are relatively unsuitable. Out of a qualitative exploratory investigation of this sort might emerge a theory that may explain why students suffer from RSI. You might get an idea from the material that you have gathered. You then test the validity of that idea by using a control of another situation with different students. You will have to persist until you have the feeling that you have found a suitable explanation or theory. Such a research approach is a matter of trial and error and adaptation (see also section 4.2.1).

Qualitative
exploratory
research

With *quantitative exploratory research* you must naturally already have some idea about what factors are likely to play a role. After all, your questions will have to have a focus. Unlike open interviews, a structured survey of RSI-related problems will require the questions to have been formulated in advance, and as such, you will have to know what sort of questions you intend asking. With a structured observation, you will need to know what types of behaviour and behavioural factors you intend to concentrate on. Consequently, you will need to have some idea of the factors that play a role in RSI-related problems and their occurrence. Some relevant factors have already been mentioned in this regard: the time that is spent behind a computer without a break, whether or not the student's computer is a laptop, sitting posture in relation to the keyboard and so on. The only thing you do not know is whether they do actually have an effect, the extent to which they have an effect and whether other factors are also involved. This is what you want to find out with your quantitative exploratory research. Bear in mind that you do have to create a questionnaire or observational list setting things out in advance. It is not possible to change your

Quantitative
exploratory
research



questions halfway through your research, which is something that you certainly can do with qualitative research. As soon as you have gathered all your data you will use statistical techniques to investigate whether you can see any connections and/or differences within it, and in particular, how strong those connections are and how great the differences. To take an example: how many of the various RSI-related complaints can be attributed to the average number of hours spent behind the computer by the student?

Hypothesis-testing research

Hypothesis-testing research

Hypothesis-testing research can be defined as what you do when you have a theory and you set about finding out whether it is correct. Imagine that on the basis of the preliminary qualitative research that you did in the department store you have come to the conclusion that in departments where sales are relatively low, complaints about that department’s managers are frequent. You, the researcher, have the impression that the managerial style in such departments is authoritarian and staff members are not often involved in decision-making processes. Consequently, the staff members do not feel as much a part of the department: their sense of personal involvement in the business is less than it is among members of other departments. In fact, the researcher’s *theory* can be expressed as follows (Table 1.3).

Theory

TABLE 1.3 Example of a theory as developed by a researcher

Theory	Authoritative managerial style > less sense of personal involvement among staff
	less sense of personal involvement among staff > less motivation
	less motivation > less dedication to the job
	less dedication to the job > lower turnover
Expectation (hypothesis)	Authoritative managerial style > low turnover

You could also make use of *existing theories*. There are a lot of theories about the effects of managerial style that are similar to researcher’s theory shown above. There is no need for the researcher to reinvent the wheel. Such theories have the advantage of often having been based on prior research and as such have been more or less tested. The researcher can then test whether the theory also applies to the situation that he or she is investigating (in this case, the case of the department store). A theory always becomes an *expectation*, and that expectation is termed the *hypothesis*. It is this hypothesis that you will *test* when you do your research. If you find evidence to support your hypothesis, you can assume that your hypothesis is correct. Not every hypothesis has to be connected to a theory. If you have created a digital mouse pen and you think that it will lead to a lowering of the rate of RSI-related complaints, you will want to demonstrate in your research that that pen does indeed have the desired positive effect. As such your hypothesis is that the pen will reduce RSI-related complaints. A lot of advertising research is also about whether your publicity is likely to have the desired effect, and this too is hypothesis-testing research. Such research can be termed *evaluation research*. It is

Hypothesis

used to ascertain whether the product you have developed – be it a mouse pen or a training course (one, for example, that focuses on making managers less authoritarian) or information about posture in relation to computer use – is likely to have the desired effect.

Qualitative hypothesis-testing research hardly ever occurs. If you want to establish the effect of your digital mouse pen on RSI complaints you could ask your respondents if they have the feeling that the pen works, but this would not constitute sufficient evidence. After all, it could be seen as suggesting an effect. The only hypothesis-testing research that sometimes occurs in qualitative research is the *template approach*. For example, if there is an existing theory about the people's motives in filling out a donor codicil (or not doing so) developed in the United States on the basis of interviews with Americans, you could investigate whether that theory can also be applied to the Dutch situation. We will return to this in section 4.2.2.

Template approach

1

Checklist 1.5 The nature of the research question and whether it involves descriptive research, exploration or testing

- What is the nature of the research: descriptive, explorative or testing?
- If testing research, what is the theory behind the research and what is/are the hypothesis/hypotheses?

- 1.1 What is the research problem and the research question, and what are the researcher's objectives?
- 1.2 Is the research question an open-ended or a fixed one? Does it involve qualitative or quantitative research?
- 1.3 What issues does the researcher want to discuss? Units and properties.
- 1.4 What is already known in relation to the research topic? Deciding on content.
- 1.5 Will the research involve descriptive research, exploratory research or testing of hypotheses?

1.6 Is the research feasible?

Even before your research gets underway, it is important to consider whether the research is actually feasible. Four factors will determine this:

- 1 Time
- 2 Money
- 3 Respondent willingness
- 4 Respondent availability (or accessibility of existing data)

Time

If you have to do some research (including that for a thesis, paper or assignment), it is wise to first *plan your time*. A handy way of going about this is to begin with the deadline –your final exam, for example – and then *work backwards*. As soon as you have drawn up a *time schedule*, you should check whether it is realistic. This is important, and will help you avoid running short of time and not being able to complete your research, a situation which would cause you frustration as well as the person who has commissioned it.

Plan your time

Time schedule

Money

To check whether your goals are realistic, firstly do a global *estimate* of what *data*, *personnel* and *time* is needed. If the research does not look *feasible* before you even get underway with it, then it would be a waste of energy to go ahead. While you will usually have a global idea of your research needs before you start on which you can base your preliminary estimate, as soon as you have drawn up your definitive research plan your preliminary estimate will obviously have to be adjusted.

Respondent willingness

Time and money are not the only factors that have the potential to hamper your research. Whether your research can go ahead at all will depend on the *willingness of respondents* to participate in it or for the material you want to be made available to you.

Willingness of respondents

How willing people are to participate in an investigation will depend on a number of factors:

- The *organization* doing the research (is it a commercial organization or is it being carried out by a university or a college of advanced education?)
- How you *approach* people
- How much *time* it will cost
- How *interesting* the subject is
- How *useful* the research is likely to be
- Whether there is an *incentive* (*material or otherwise*)

Incentive

Use the above list of points to estimate how difficult it will be to obtain respondents for the research that you have in mind. You will need to ask yourself whether you are likely to find enough people to take part in it. Too many people giving you a refusal will render the research relatively pointless. If you are doing research into customer satisfaction for a travel agency and only 10% of the clients you have listed respond, this could constitute quite a selective group: probably clients who are either highly dissatisfied or highly satisfied. You will be lacking those clients who form the middle group: satisfied with some things and not satisfied with others. As such, your research results will not be representative of all of the clients of the travel agency. To be able to make generalizations on the basis of your research results, it is important that you have a representative research group at your disposal. It is better to have a small but representative group than a very large group with a high *non-response* rate (see also section 2.3.1).

Refusal

Non-response

Respondent availability/accessibility of existing data

It is not only willingness on the part of respondents but also *respondent availability* that can cause problems. A lot of target groups are not listed anywhere and so obtaining a sample poses a problem: where, for example, would you find people who have bought a PC in the past year, or unemployed fathers with children between the ages of six and twelve, or even more difficult to find, migrants who are working illegally? Assuming that you want a representative sample, you may well underestimate the time needed to find people like this. In the absence of lists of names and addresses, you will firstly need to estimate how much time and trouble it will cost to find enough people to have a representative sample.

Respondent availability

Even if you are making use of existing data – for example, data relating to sick leave among company employees, or student results – make sure right from the start that you have access to this data. Companies as well as government organizations are particularly cautious about making data accessible. Take into account that some government organizations (including municipal offices) may charge you for looking for data and making it available to you.

After taking all these four points (time, money, willingness and availability) into account, you will have to decide whether to go ahead with your research.

The website www.research.noordhoff.nl contains examples of estimates as well as forms that you can fill in to make your own estimates and plan your time.

Checklist 1.6 The feasibility of the research

- Is there enough time available to do the research?
- Is there enough money available to do the research?
- Can you find enough people who are willing to participate in your research?
- Is your non-response rate likely to be high?
- Are you able to access any existing data you might need?