

*How to do...*

# Research

Roel Grit  
Mark Julsing

 Noordhoff Uitgevers



First edition



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**Roel Grit**

**Mark Julsing**

**First edition (corresponds to the second Dutch edition)**

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# Preface

Organizations commission research on a regular basis. They usually want new knowledge to be created or existing knowledge evaluated. The researcher will be required to examine a particular topic carefully and systematically with the aim of discovering new facts or theories or checking existing ones.

## Higher education

There is an expectation that higher education will deliver ‘knowledge workers’ or even ‘innovation professionals’: professionals in their particular field who not only apply what they have learned but are able to think up solutions to new problems. As such, a professionally trained person is expected to possess research skills by the time he commences his career. This applies not only to university graduates who have been trained in research techniques but as a consequence of the increasing emphasis on academic skills, also to those who have done their training at institutes for advanced professional education. Although a graduate from an institute for advanced professional education may not have been trained to be an academic researcher, he will be expected to be able to perform research, particularly applied research. And once professionally employed, he will be expected to be capable of assessing the research done by others.

Consequently, students are trained to do research right from the start, and will do research to a greater or a lesser degree throughout the course of their studies. Most courses conclude with an assignment which involves at least some research. The final research assignment is frequently viewed as proof of the student’s ability and the quality of the final research report is often seen as a denominator of the quality of the course itself.

## Research quality

Since there are no final exams at the highest levels of the education sector, educational standards at this level are assessed (or partly so) by means of so-called accreditations. If these accreditations detect a drop in educational standards among students in advanced professional courses, their final research will be subjected to extra scrutiny. Increasingly, educational processes are coming under the microscope and research standards are being subjected to tighter controls, from the research proposal put forward at the start to the final assessment of that research.

The following are crucial to ensuring that final research projects meet the accepted standards:

- 1 The course must be able to demonstrate sufficient diversity in its research topics. For example, a commercial course should not only

focus on performing market research with all the necessary market questionnaires and statistical analyses but should also encourage research into a variety of topics in the commercial field. Courses need to encourage research diversity by making maximum use of the particular skills and specializations of its teachers and lecturers. In universities, the same applies, naturally, to the specific areas of expertise of its professors. Having an inventory of these specializations can help enhance research diversity.

- 2 Courses must be mutually comparable from beginning to end and the assessment of the research must be clear and transparent, beginning with the initial granting of approval to the research project. During the course of the research project, assessment should be based on the description of the approach as set out in the research plan right through to the performing of the research itself and the delivery of the research report and, where applicable, to any presentation and defence of the research results.

Since research areas are largely determined by the course in question, this book can add little to point 1. But *How to do research* offers the student all that he needs to satisfy the requirements as set out in point 2.

### ***How to do research in eight steps***

Standardizing research methods is one way of ensuring that adequate control over a research project (as per point 2) can be exerted. The book that lies before you represents a practical plan of approach to research. It consists of a clearly structured and all-inclusive blueprint for doing research, from formulating the first ideas to handing in and presenting the results. The information needed to take that step is presented immediately prior to each step of the research process. The book is a practical manual. Every research student will benefit from having it within hand's reach and open at the right page.

### **Think up your own plan?**

Teachers are likely to be in two minds about whether to provide their students with a blueprint for doing research or to let them think through the process themselves. After all, you can find checklists and guides to suit all purposes on the Internet and Google and in course books. However, there is no way of ascertaining their quality and they are likely to lead to a lack of uniformity in the way that research is approached. This can make it extremely difficult for the course supervisor to assess the quality of the research during the course of the project. Moreover, getting students to think up their own plan can be time consuming: time that they could put into the actual research. Added to this disadvantage is the likelihood of students becoming too focussed on the competencies that the book sets out as being necessary for research rather than on the plan itself. The blueprint for doing research as described in this book has been extensively tested in real-life situations.

## Who is this book for?

It is probably clear from the above that this book was written with the following readership in mind:

- Students who are required to perform research at various stages of their course
- Teachers who have to supervise these students and their research and want to do so in a structured way which is open to scrutiny
- Those who are only required to perform research at irregular intervals and are looking for a handy guide to doing that research

This book has been written in such a way that it can be used in many different research areas, whether the area be survey-based market research (the subject of countless other books), technological and scientific research, research into health care or research into how to improve organizational processes.

At the same time, *How to do research* will be useful for those performing applied research culminating in a set of recommendations to be applied to a plan of implementation or even a fully customized design. After all, applied research aims not only to formulate conclusions but to apply them, whether in part or in full.

## A note of thanks

We would like to thank the following people for their contribution to this book: Sjia Cornelissen, Ageeth Bergsma, Judith Boertjens, Cor Meijer, Frank Huser, Nico van der Sijde, Marleen Boer, Jantine Bouma, Jan de Geus, Alexander Grit, Paulien Kreuzer, Marco Hoogerbrugge, Dick Bond, Erik de Been, Cathelijne Engelvaart and Frances van Berkel.

For the sake of lucidity, we have used ‘he’ where ‘she’ would apply equally well.

Spring 2014  
Roel Grit, Emmen  
Mark Julsing, Utrecht

# How to use this book

While this book will prove useful for those performing research professionally, its main target group is the higher education sector.

## Research in the educational sector

University students are trained to perform scientific research and performing that research forms an important part of their study program. Research is now becoming increasingly important in colleges of advanced professional education, with research activities included in the curricula of such colleges and training in research given throughout each course. Research is a complex activity and should not be undertaken lightly. The following are some ways that a teacher can gradually introduce students to the business of doing research, arranged in order of difficulty.

- Offer ‘Research techniques’ or ‘Research methodology and techniques’ (or something similarly named) early on in the course. You could require each student to perform regular small-scale research in order to accustom them to the process.
- As an exercise in problem-related learning, ask your students to perform independent research into operational issues relating to their particular field of study. They could perform this research either individually or within a group.
- Ask your students to perform applied research in an area relating to their particular field of study. The research could take any form: market research, research into consumer satisfaction, logistical research, quality research or a feasibility study are just some of the possibilities.
- As an extension of this, you could ask your students review the literature and write the review up in the form of a report or an essay.
- You could ask your students to perform a number of connected experiments, whether as part of a sociology course, a chemistry course or some other course.
- If the course includes an internship, you could encourage your students to perform a research project as part of that internship.
- Follow the lead of many postgraduate courses and require your students to round off their studies by doing a research project.

## How teachers can use this book

We would invite teachers to apply the practical and methodological guidelines set out in this book to any one or all of the following situations:

- 1 As a way of supporting *small-scale individual research* within a group context. Requiring students to perform each step individually will enhance their understanding of the process.



- 2 To help students write a *research proposal*. You could ask your students to write a complete research proposal according to the guidelines set out in Step 1. You would assess the proposal in terms of its quality but not require the research to be performed.
- 3 To help students write a *research plan*. You could ask your students to write a complete research plan according to the guidelines set out in Step 2. You would assess the proposal in terms of its quality but not require the plan to be implemented.
- 4 To help students *design their research*. You could ask your students to follow steps 1 through to 3, ultimately creating a research design blueprint. You would ask your students to develop the instruments they need to employ though not actually employ them.
- 5 To help students undertake a *fully fledged research project*. You could ask your students to take a more or less theoretical topic or a case and follow at least seven of the eight steps described in this book
- 6 To provide your students with support while they undertake an *actual research project* commissioned by a genuine client either during an internship or as a postgraduate requirement. They would have to follow every one of the steps and demonstrate that they have complied with any additional criteria set by their particular course.

## Get going!

*How to do research* is not a book on research theory: it is a practical, solid and coherent blueprint for research. We introduce each step first, and then we launch you on your way via various activities. Each activity is numbered for the sake of convenience, and in turn is also introduced. Checklists are sometimes included too. The research report that is the subject of Step 7 represents a compilation of the previous steps. You may need to consult some additional literature.

The assignments in this book fall into two categories:

- 1 *Activities*. These are the things that you will have to do to perform the research itself. While the activities have been numbered, the numbering does not automatically follow the order in which they have to be performed. You may find yourself having to do several things at once since each activity is interrelated. You might have to retrace your steps on occasion, perhaps even returning to a previous step. On the other hand, you may find that you can skip some activities.
- 2 *Additional assignments*. These are shown at the end of each step. They are not immediately relevant to your research report.

## [www.howtodoresearch.noordhoff.nl](http://www.howtodoresearch.noordhoff.nl)



The website [www.howtodoresearch.noordhoff.nl](http://www.howtodoresearch.noordhoff.nl) contains support material in the form of spreadsheet models, checklists, hyperlinks and Word MS models. Teachers will also find useful material on the website, including a PowerPoint presentation, tips for organizing your teaching and a list of criteria for assessing research.



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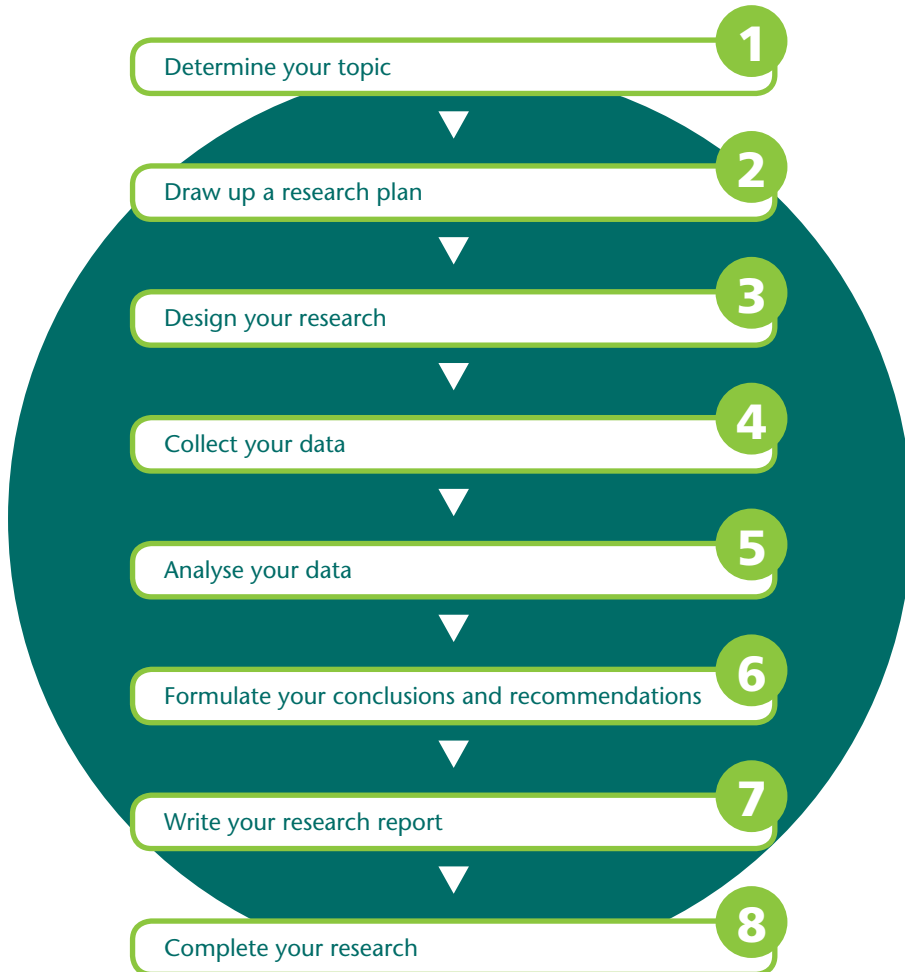
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# The eight steps of ...



# How to do research

During Step I you will decide what your topic will be, you will formulate a provisional description of the research problem, you will identify where your topic's boundaries lie and you will write your research proposal, which you will then present for approval to your client (the person who has commissioned the research).

During this step you will formulate the definitive research problem and research objectives and in so doing, define your research project. You will also formulate individual research questions and investigate what conditions apply to the research and how feasible the project is.

During this step you will design the instruments you need for your research project.

You will now go about the business of data collection.

During this step you will make a selection of the data you have collected and you will systematize and analyse it.

You will now describe the conclusions you have reached and formulate your recommendations. You could expand on these recommendations and show how they could play out in various scenarios or even include them in a plan of implementation or present them as a customized plan to suit a specific situation.

Now it is time to write up your research report. If you are doing applied research, you could consider including a plan of implementation or design in which you incorporate your recommendations.

The final step is presenting your research project and defending your findings. If you wish, you could start implementing your recommendations or your plan.

# How to do research

This book adopts a project-based approach to research. It will lead you through the various stages of research, which it divides into eight steps (shown on the inside cover of this book), culminating in the all-important research report.

This initial chapter can be regarded as Step 0 of your research. It contains an introduction to research, giving some examples, listing some types of research and defining a couple of important concepts. The competencies that the researcher needs to possess are described and we highlight the need for integrity in the researcher. The chapter also contains a brief description of what needs to be included in the final research report. After you have read this chapter you will get underway with your first activities.

Many of the decisions that the business sector makes are made on the basis of research. A combination of different skills is needed to perform that research. Research creates the knowledge and the understanding needed to explain and predict events and circumstances. Research can lead to a problem being solved or a situation being improved.

During this step of the research process, you will be asked to:

- 0-1 Decide what your particular research skills are
- 0-2 Find out what standards your research needs to meet
- 0-3 Gather information on research
- 0-4 Plan your research

Step 0 aims to:

- deliver information about research and research standards
- prepare you to take on the role of researcher.

## Doing research

Doing research is often less complicated than you expect. Everybody does it in a minor way: you are doing it when you try to work out how to change the rear wheel of your bike, or when you ask yourself how best to organize a trip to Australia or an internship. Children are researchers par excellence: they will work out things like how to put all the wooden blocks back into a box, how to put a Lego car together and how a computer program works.

Research can be fascinating and great fun. It requires you to work out exactly what you want to find out, to talk about things with others, to gather and analyse information, to think up solutions and to draw conclusions. Research satisfies one's curiosity and is educational. It can fully absorb your attention and make you determined to produce answers to your questions.

A good piece of research will require you to answer a number of questions, including:

- What is my research topic?
- What am I aiming for with this research? Why am I doing it?
- How can I best formulate the research problem and follow it up?
- What is the best way of setting my research up?
- What is the best way of organizing my research?
- What methods and resources should I employ?
- How should I go about collecting and analysing my data?
- How should I formulate my research report?

This book aims to answer all of these questions and to provide a blueprint for the research process. It will provide useful guidance regardless of whether you are taking your first steps as a researcher or you are already an experienced researcher. The steps that will guide you and brief description of them are set out on the inside cover of this book. The following chapters of this book deal with all of these steps in detail, starting with a brief discussion of theoretical issues and followed by the activities that you will need to perform. These culminate in the writing of your research report, the subject of Step 7.

## Research within organizations

Research is frequently performed by businesses and other organizations. The following list will give you an idea of the various forms that such research may take:

- *Market research.* This is the systematic collecting and analysing of the information needed to identify and respond to a marketing issue.
- *Advisory research.* This type of research focuses on the management side of a business and might be required in the event of a reorganization or when there is a need to improve the efficiency of certain processes.
- *Information analysis.* This is the sort of analysis that is performed if you want to find out whether it is possible to devise or adapt a data system and what the effects are likely to be.
- *Environmental impact study.* A study of this kind might be performed by an environmental bureau wishing to find out what effect putting up a factory is likely to have on the environment.
- *Biological research.* This is research into such things as the mating behaviour of a particular animal.
- *Educational research.* This is the sort of research that you would perform if you wanted to find out how successful a particular way of teaching maths has been.
- *Pharmaceutical research.* This is the sort of research performed in order to test out a new drug. A lot of research goes into ensuring the efficacy and safety of a drug, not to mention the methods used to produce it.
- *Logistical research.* This type of research is aimed at finding out how to reduce product delivery times or the cost of transport.
- *Feasibility study.* This is aimed at gaining an insight into the problems that might arise in order to achieve certain goals.
- *Quality research.* This sort of research is aimed at finding out whether a particular product conforms to certain standards.

- *Research into nursing care.* This type of research might need to be performed in order to optimize the care that a patient needs to receive after undergoing operation X.
- *Health and safety research.* Research of this kind might be required in order to investigate the working conditions within a particular company. It might include an investigation into employee well-being, the causes of back pain or the feasibility of teleworking.
- *Pure/scientific research.* Universities perform this type of research. Its sole purpose is the advancement of knowledge and the development and trialling of new theories, whether sociological theories of human behaviour, how stars are born or what an atom is made up of.
- *Engineering research.* This is research into such things as how architecturally stable a house is or the standards that an as yet unbuilt house will need to comply with.
- *Risk analysis.* With this sort of analysis the goal is to determine what threats are faced by a business or a football match, and what the risk is of investing in new technologies.
- *Sensory research.* This is research done to find out what consumers think of a new product's taste.

## Research during your course

By the time they graduate, tertiary-level students are expected to possess sufficient research skills to be able to perform research on their own. Students at colleges of advanced professional education are expected to perform *applied research* while university students are mainly expected to do *scientific research*.

After graduation and in employment, they will be expected to make decisions that they can justify. Aided by skills developed during research assignments, they will have to devise new solutions that actually work and lead to concrete improvements. Such skills include the ability to work according to a plan, to think and analyse logically, to ask appropriate questions, to assess the feasibility of something and to think up solutions. Skills like these enhance an employee's *professional credibility*.

If you have already graduated and are working as a researcher in a company, you are at the hub of a lot of data. The trick, though, is to be able to get hold of the right sort of data from the people you want to get it from, and to do so proactively. Any missing data will have to be obtained by means of research (and even if you are not going to do the research yourself, in some later profession you may find yourself having to assess the standard of research that others have done). How would you, the researcher, go about research of this sort? You cannot simply plunge in and hope for the best: the job must be approached *systematically*. This book shows you how to go about it in *eight steps*.



### Applying the eight-step plan

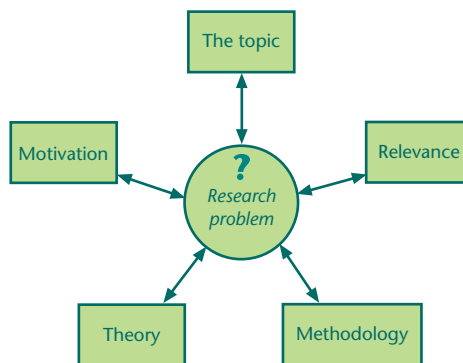
- While a teacher might require you to go through all of the steps and perform a complete piece of research, the eight-step plan has been so devised that your teacher might ask you to do a ‘dry run’ and only require you to practice doing Step 1, or steps 1 and 2, or steps 1, 2, and 3.
- The methods described in this book are not only suitable for extensive research projects: they can also be applied to small-scale research projects.

## Some aspects of research

Before you start your research, consider the following aspects of research, all of which exert an influence on each other (see Fig. 1):

- *Topic.* What is my research topic? What is already known about this topic? In other words, what is my research about?
- *Motivation.* What motivated me to choose this precise area of research? Why this topic and no other?
- *Research problem.* What is my research problem? What question do I want my research to provide an answer too?
- *Relevance.* Why is my research important to me or to the person who commissioned it (from whatever company or area of society)? In other words, what is the added value of my research to the community?
- *Theory.* What existing theories and theoretical models do I intend to employ as the basis of my research? In other words, within which theoretical frameworks will my research be situated?
- *Methodology.* How do I propose to commence my research? Within my subject field, what methods are usually employed to carry out research and which do I intend to actually use? This book can, in fact, also function as a research model.

Fig. 1 Some aspects of research



Your research questions will be influenced by the topic, your motives, the relevance of the research and your theoretical framework and methodology. However, the reverse is also true: the way you formulate your

research question will have implications for your topic and for your theoretical framework and methodology and will influence your motives. If you alter the formulation of your research question, this could mean that you will have to adjust your theoretical framework or even the methods you intend to employ. Your research question is central to your research and forms your navigation instrument or route planner, as it were.

## Types of research

Research can be classified in a variety of ways. You could choose to do theoretical research as opposed to practical research, for example.

*Theoretical research* aims to develop a theory or model and to acquire new knowledge or to throw new light on something.

*Scientific research* is usually theory-based: research into the causes of Alzheimer's, for example, or the nature of gravity. Research that is based purely on the 'need to know' is often termed fundamental scientific research. Such research is not only performed in universities: major companies such as Philips and Shell also perform it.

*Practical research* is intended to solve problems of a practical kind and is also referred to as *applied research*. Research of this kind is commissioned in order to supply the client with knowledge that he can use to solve a problem. It is also known as problem-solving research and being immediately relevant is an absolute prerequisite. Students in advanced professional education courses are usually trained to be able to perform applied research. Research of this kind includes market research, feasibility studies and quality research.

Research can also be classified according to *research method*:

- *Qualitative research*. This is research involving a large quantity of in-depth information in respect of a limited number of *research cases*. With research of this kind, your aim is to immerse yourself thoroughly in your subject matter by focussing in particular on the nature of the phenomenon that you wish to investigate: issues such as how frequently something happens and what causes it. In order not to overlook anything, you will collect a large amount of data relating to a small number of cases. Indeed, sometimes you will only have a single case, as in research into organizational processes within a single organization. Alternatively, you might be asked to compare two situations. In-depth interviews and group discussions are two examples of qualitative research methods.
- *Quantitative research*. With research of this sort, the focus is on the degree (the size or the quantity) to which something occurs, and consequently you will be able to measure it in *numerical form*. You will collect information about research cases that are numerous enough for you to be able to extrapolate your findings to entire populations. If your research units are the Inuit people, the goal of your quantitative

research might be to find out what an Inuit's average weight and height is, for example. Market research involving a large number of questionnaires is quantitative research.

In scientific fields, the data is collected largely via instruments of measurement. In the field of behavioural sciences, quantitative research is mainly done to chart the knowledge, opinions or behaviour of a large number of people. Research of this type achieves greater reliability the larger the number of research cases. The word 'quantitative' means 'involving amounts' or 'involving measuring things as amounts' and quantitative research is largely aimed at delivering measurable values to be analysed using statistical methods. Constructs such as validity and reliability are crucial to quantitative research. They will be explained later.

The distinction between qualitative and quantitative research is an important one since it will determine how you approach your research and the methods you employ. If your research project is relatively extensive you may find that you need to employ both methods, with data that relates both to the qualities of what you are researching as well as to its size. If you are researching soccer match-related vandalism, you are likely to want to describe what form that vandalism takes as well as how frequently it occurs or how many people engage in it. Here too, you will notice that the method you choose is to a large extent determined by how you formulate your research question: your research topic has consequences in terms of the way you choose to research it.

## Some concepts

Before you undertake the first steps described in this book, we will briefly discuss a number of concepts frequently used in the field of research:

- A *research proposal* is a proposal in which you describe what it is that you want to research and how you propose to do so in global terms. This proposal will need to be approved by your client, supervisor or course. Step 1 shows you how to go about writing the research proposal.
- A *research plan* is a research document that you write after getting the green light for your research but before you start it. It is a plan setting out how you intend to approach your research and defining it by means of such things as a description of your research goals, the theoretical framework, the research problem, the research questions and a timetable. Step 1 shows you how to go about writing your research plan.
- The *research problem* (also called the research question) is the main question that you need to address in your research report. The research problem should consist of a number of research questions (the so-called sub-questions). It is crucially important that you define the research problem clearly. Do so in consultation with your client or supervisor.
- A *conceptual model* or *conceptual scheme* is an outline of the main elements of the research, their properties and their mutual connections and correlations.

- The *research design* consists of the methods and tools that you will design and develop for use in your research. Step 3 will show you how to go about this.
- Your *data of information* consists of the facts which your research has identified as being able to provide an answer to your research questions.
- An *analysis* is the systematic study and organizing of the research findings. During this research phase you will make connections between the various results (causes and effects) and indicate which elements are relevant and which are not.
- A so-called *SWOT analysis* (Strengths, Weaknesses, Opportunities, Threats) is an analytical model in common use. This sort of model could be used in such areas as organizational research, market research and policy research.
- A *conclusion* is your final judgement. In which you provide answers to your research questions on the basis of an analysis of your research findings.
- A *recommendation* is a piece of advice that you give on the basis of your research conclusions. If so desired, recommendations can be operationalized in the form of a *plan of implementation* or a *customized design*.
- A *hypothesis* is a theorem that has not yet been proved and which formulates a connection between one situation and another. Your research will focus on attempting to demonstrate the validity of your hypothesis. If your research shows that your hypothesis is not tenable or no longer so, it must be rejected.
- An *experiment* or a *test* is a careful observation of a particular aspect of reality in order to test a hypothesis. The researcher will take various forms of a particular variable (temperature, for example) and test them against another phenomenon (pressure, for example).
- *Empirical research* empirical research is research performed on the basis of observations of existing phenomena.
- *Ad-hoc research* is research of a once-off kind, usually performed in reaction to something unexpected.
- *Continuous research* is research performed on an on-going basis (daily, weekly or monthly) during which data is collected (for example, research into TV viewing and radio listening behaviour).
- *Implementation* is the term used to refer to the operationalization of the results (the recommendations) of a piece of applied research.
- *Trial and error*. If you want to solve a problem you may first want to try and find out what the effect of your proposed solution is. If it does not work, you could try something else until the desired effect is achieved. We do not recommend this approach.
- A *research unit* is one of the elements of your research that you will be researching. A research unit could be a person – a public official, say, or a student – or events, articles, chemicals or even crows.
- Your *population* consists of the sum total of the research units in your research project.
- A *sample* is a representative part of your research's target group. If your sample is sufficiently large you can extrapolate from it to make fairly accurate predictions that apply to whole populations.
- A *survey* (or an *opinion poll*) is a research method in which a large number of respondents are interviewed with the aim of collecting data of many different kinds.

- *Philosophy* is a discipline in which the fundamental principles of various sciences are investigated as well as their history, research methods and influence on various aspects of life.
- A *scientific method* is one that you could typify as follows: you examine a phenomenon, raise a hypothesis, make predictions on the basis of this hypothesis, put these predictions to the test by doing experiments and evaluating the measurements you have made. You then apply your hypothesis and either reject it or subject it to further testing.
- *Doctoral research* is scientific research done by a person who has successfully completed the preliminary study requirements to be accepted as a doctoral or PhD student. PhD research usually takes about four years to do.
- A *supervising professor* is a professor who supervises a PhD student during the course of his doctoral studies. A professor is addressed as *Professor*.
- A *doctoral thesis* or *dissertation* is an extensive scientific report on a particular topic written by a doctoral student.
- A *scientific article* is a scholarly publication showing the research results of a piece of scientific research, preferably in a reputable journal. A researcher's career can hinge on the number of articles he has had published.

## The competent researcher

A researcher must possess certain skills to be able to complete a piece of research successfully. A *competency* is a combination of the knowledge, skills, personal attributes and attitude needed to function well in a particular professional situation.

The competencies and qualities that a researcher needs to have fall within the following areas:

- 1 *Knowledge* of the *discipline* within which the research area lies. A person who is researching the lines of communication within a company needs to understand what communication is about. If you are doing research in the field of chemistry you will need to be familiar with that field.
- 2 Understanding of the appropriate *research methods*. If you are performing statistical research you will need to be familiar with statistical software. A physicist must be able to handle the equipment he uses for his experiments and to interpret the results.
- 3 *Creativity*. Researchers will often find themselves having to think up – that is, create – new and sometimes unusual solutions.
- 4 *Precision*. Researchers need to be precise when they collect, process and analyse their data.
- 5 *Project management*. Researchers must be able to ensure that their research is carried out in a structured way and that it remains within the agreed terms, time and budget of the project.
- 6 *Analytical ability*. Researchers must be able to reflect on, analyse and explain coherently (argue) why they have reached the conclusions they have reached.
- 7 *Problem-solving ability*. This is the ability to dissect problems and to distinguish between the main issue and side issues.

- 8 *Enthusiasm*. Researchers must not only be highly motivated and passionate about their research: they need to be able to persuade others to join in.
- 9 *Initiative*. Researchers with initiative are skilled in detecting opportunities and problems, in making proposals, in coming up with solutions and in initiating things independently.
- 10 *Integrity*. By this we mean that researchers must be able to perform their duties satisfactorily, objectively and with due care and awareness of their responsibilities and the rules that govern how they work. We will go into this in greater detail in the next section.
- 11 *Further skills*. Researchers also need to be able to write a sound report, to possess interviewing skills and to hold a presentation of their results. The ability to negotiate and to handle conflict might also be needed if the final recommendations need to be 'sold' to the client.

Doing research while they are still studying encourages students to develop these competencies.

#### ACTIVITY 0-1



#### Determine what your particular research competencies are

- a Decide which research competencies you already have and how good they are. If you need some help, download the research competences.
- b Which competencies do you lack?
- c How do you intend to acquire them?

### The ethical researcher

We would think it ethically unacceptable for people to be used as guinea pigs in trials involving car collisions. *Ethics* is about good and evil, about what you can do and what you should not do. Is the research that you propose to do ethically acceptable? While ethics is about constructs such as norms and values, it is also about integrity. Unjustifiable or improper use of power, position, knowledge, relationships or authority to create an advantage for yourself or others can be termed behaviour that is unethical. How might integrity in a researcher manifest itself?

The *ethically responsible researcher*:

- ensures that his research data remains confidential (if relevant)
- does not fabricate data
- does not leave out data that could affect the research
- ensures that his research is open to scrutiny
- ensures that his research is *falsifiable*, or in other words, we have to formulate our conclusions of our research in such a way that they have an inherent possibility to be proven false by performing more research.
- does not allow his independence to be taken away by his client or let himself dance to somebody else's tune.
- observes the standards and norms of his particular discipline
- observes ethical and legal boundaries and what he and society regard as acceptable forms of research (animal testing, testing using human guinea pigs or using information that violates privacy come to mind).

TIP



### Codes of behaviour for researchers

You will find some links to codes of behaviour for researchers on the website that accompanies this book.

## Project management and the research blueprint

Research is performed as a *project* and has all of the distinguishing feature of a project, including a commencement time, a completion time, a client, an organizational base and a budget. As such, performing good research involves an understanding of *project management* and how to go about it (*Project management*. Grit, 2011).

A project is often divided into various stages, or as we call them in this book, steps. As we have mentioned and shown diagrammatically at the start, this book represents a blueprint for the research process. With project management (and by extension, to research) it is important that you start to think in terms of the products you want to deliver. Each step of this book aims to deliver at least one product. Fig. 2 shows the main products delivered on a step-by-step basis.

Fig. 2 The main products per step

	Step	Main product
1	Determine your topic	– An approved research proposal
2	Draw up a research plan	– An approved research plan – Global plan of approach – Preliminary estimation of the budget
3	Design your research	– Research instruments – Plan of analysis – Project schedule – Budget
4	Collect your data	– Collection of raw data
5	Analyse your data	– Systematized data (graphs, tables etc.)
6	Formulate your conclusions and recommendations	– Conclusions – Recommendation – Potential areas of application – Potentially: a plan of implementation – Potentially: a customized design
7	Write your research report	– Research report
8	Complete your research	– Presentation – Evaluation and peer review

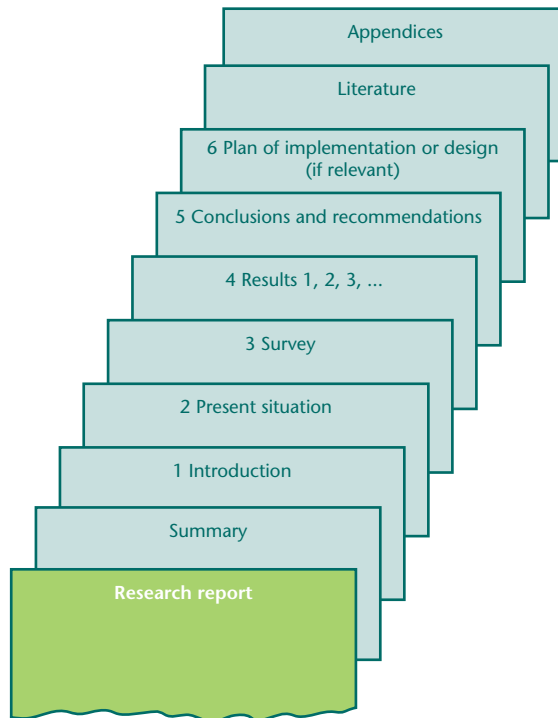
## What the research report must contain

Your research must culminate in a *research report* and a presentation of that report, the most important end products. In addition to a justification of the research, it must contain the results and your conclusions and recommendations. After following each step and doing all of the activities (see pages 10 and 11), you will then compile your research report following the guidelines in Step 7. A research report written as to satisfy the requirements of a tertiary degree is termed a *thesis*

A research report can be constructed in various ways. However, whatever your choice, it must form a coherent whole, with clearly formulated conclusions and recommendations that reflect the research results (see Fig. 3). Depending on the type of research, the report should consist of several chapters. Fig. 3 shows one particular way of constructing your report. We will deal with this shortly.

Fig. 3

An example of how to construct your research report





### **Summary**

Some readers will not want to read the entire report. As such, the report should begin with a summary of the results, the so-called abstract. Those readers will be particularly interested in this section as well as in the conclusions and recommendations. The introduction might also be read. These sections are therefore crucially important.

### **Chapter 1 Introduction**

This section should contain a concise description of what was researched: a 'what and why' explanation and who commissioned the research.

### **Chapter 2 Present situation**

Good research starts with an understanding of the current state of things. If they are important, you could describe your research parameters at this stage. What was known about the topic before you started your research?

### **Chapter 3 Survey**

At this stage you will need to describe how you have designed your research. You will refer back to the main research question and the sub-questions as well as to the theory, methods and resources you have employed. In this chapter you should also justify how you reached your conclusions and recommendations.

### **Chapter 4 Results 1, 2, 3, ...**

You will now present your research results. These will have been reached after an analysis of all the data. If you wish, you could expand the number of chapters, devoting a chapter each to specific concerns or individual research questions.

### **Chapter 5 Conclusions and recommendations**

Now you will answer your main research question and each sub-question, and present your recommendations.

### **Chapter 6 Plan of implementation or design (optional)**

This optional section could be added in the form of an additional chapter (or chapters), or if you have done applied research, as an appendix (a supplement). It should describe how your recommendations could be implemented. You should consult your client or supervisor about whether this section falls within the framework of your research project. Optionally, a plan of implementation or customized design could be presented as a separate document.

Step 7 (see Fig. 17) will deal with what the research report should contain and the requirements it must comply with.

## Meeting quality standards

For your research to conform to what is expected of a research project, the quality of the products as presented in Fig. 2 must be monitored. Your client or supervisor is the person for this, and you should make clear prior arrangements with him as to how to obtain his approval.

In the following sections we will preview your research's end product and describe how it will be assessed in terms of its quality. It is a good idea to keep this in mind prior to and during the research process.

### Avoid errors

Ensuring that your research meets *quality standards* is of prime importance. Errors will invalidate your research results.

The following describes some of the errors you can make (Oost, 2002):

- *Attitudinal errors*. A researcher who does not invite constructive criticism is committing an attitudinal error.
- *Strategic errors*. A researcher must have *sound research skills* or risk making strategic errors by not approaching the project in the right way. He might choose the wrong research methods or techniques or not apply them in the correct way. He might ask the wrong questions.
- *Errors of logic*. The research conclusions must be derived from a logical analysis of the data. A researcher must be able to reason logically.
- *Random errors*. Errors of this kind can occur if the researcher is not fully in charge of the circumstances. If the research is repeated (either with the same measurement methods or different ones) and the results are found to be different, this means that the found data is not reliable or precise enough and consequently the findings are open to question. A measurement might be completely out of keeping with the other measurements through some fault of the researcher. A measurement of this type is termed an outlier. Whether this is so (meaning that it can be left out) can be determined by performing certain analyses. These go beyond the scope of this book.
- *Systematic errors*. These are errors that have crept into the research because the wrong methodology or unsuitable instruments were employed. They cannot be described as random errors but rather consistent errors. The observed data and answers will not be *valid* and consequently will be incorrect. Obtaining socially acceptable answers to questions is an example of a systematic error. Systematic errors can also occur if a measuring tool is not calibrated properly or the software used makes a calculation error or does not round off correctly.
- *Correspondence bias*. These are errors that occur when the conclusions reached by the research do not correspond to what the researcher set out to research. The answers are not in *conformity* with them.

### Meeting research report standards

Your research will culminate in a research report. Its quality will be partially dependent on the following:

- whether it conforms to structural requirements (such as layout, length and referencing)
- whether it is logically constructed

- whether its standard is high enough
- whether the research objectives, the research problem and the research questions are clearly formulated
- whether there is reference to relevant theories and sources
- how well the researcher has justified his approach and the methods and models he used
- the absence of errors such as those described previously
- the extent to which the conclusions and recommendations relate back to the research results

### Meeting procedural standards

How well the research is received will also depend on how well the researcher has performed the research, or in other words, how well the *research process* was followed. The following will play a role:

- Whether the researcher worked efficiently and effectively. Did the researcher stick to the arrangements? Did the researcher maintain sufficient contact with the client or supervisor?
- Whether the researcher worked systematically and methodically.
- Whether there was an excessive amount of supervision (either by a business or course leader). In other words, to what extent can the research be attributed to the researcher himself?
- Whether the researcher took sufficient notice of the feedback given.
- Whether the researcher made sufficient use of relevant literature and theory sources.
- Whether the results were analysed in the correct way.

### Meeting presentation standards

Research results often have to be presented orally, in the form of a *presentation*, and justified to the client or supervisor. How well it is received will depend on such things as the following:

- The technical quality of the presentation, including how well it was structured, whether good use was made of various media, how well the presenter interacted with his audience, how confidently he presented his material and whether his behaviour was appropriate.
- His insight into his topic.
- Whether the results stood up to questioning and to what extent they were supported by the theory and other sources.
- The extent to which the researcher was able to reflect objectively on his research.

## ACTIVITY 0-2

### Find out what standards your research is expected to meet

Find out what your client or course supervisor expects of you in terms of the quality of your research project. Look at each individual aspect: the research report, the research process and the presentation. Look into whether you are also expected to deliver a plan of implementation.

## More specialised types of research

Research projects can be highly varied in nature. A biological study into the mating behaviour of exotic birds is not the same thing as research into the success of a certain way of teaching maths in schools. Nevertheless, the approach described in this book can be applied to both these types of research. You will find that some research areas follow more or less standardized approaches and that standard methods can be applied: take, for example, research into the efficacy of a drug or market research. Investigate the methods your particular discipline usually employs, but take a critical view when you apply them.

Some types of research aim to produce a full-scale *plan* or *design*: a description or blueprint of a situation that does not yet exist. A plan for a new situation can be seen as a comprehensive set of recommendations. *Logistical research*, for example, might culminate in a design for a warehouse facility or detailed set of recommendations. *Quality research* might aim to produce a blueprint for establishing a company structure in the form of a standards manual. An *information analysis* might aim to produce a so-called functional design and *technological research* a design for a yet to be built chemical factory. Research projects of this sort certainly fall within this book's frame of reference. We will deal with highly specific types of research under each of this book's steps, under the heading 'More specialised types of research'. The end product of a research project that culminates in a design could more accurately be termed a *design report* rather than a research report.

## Looking for information: the Big 6



The 'Big 6' is an information collecting and processing model developed by Eisenberg and Berkowitz. ([www.big6.com](http://www.big6.com)). It is a model that you could apply throughout your entire research project. The model consists of six activities:

- 1 Defining your task. Determine what exactly your information problem is and work out what information you need to solve the problem.
- 2 Choosing an information seeking strategy. Investigate possible sources of information and select the most reliable sources.
- 3 Locating your sources of information and finding the information. Your sources could include literature on the subject, the Internet, experts and specialized databases.
- 4 Processing the information. Is it reliable and useful for your purpose? Select the most suitable information and work out how to use it. Ask yourself whether the information is relevant. Take a critical approach.
- 5 Restructuring and synthesizing the information from each source, then presenting it.
- 6 Evaluating what you have done. Is the information you have ended up with useful in terms of your original purposes? Could you improve on your information collection process? Could it be conducted in a more efficient way? If needs be, adapt your information seeking strategy.

## Be proactive in looking for information

A researcher must go about his research in a structured way if he wants a professional result. While this book describes in quite some detail the

steps you need to take, it is not a book on theory. You will need to collect as much information as you can on the research process. Go and talk to people, look at websites that give information on research and read books on research.

TIP



### Websites

The website that accompanies this book contains links to sites that give useful information about research.

## ACTIVITY 0-3

### Collect information about research

- a Read this book carefully. Read through all of the steps to get an idea of what awaits you. Make sure that you understand all of the concepts.
- b Look for information in books and on the Internet on how to do research. Study it carefully.
- c If you can, make appointments to interview researchers. Tell them what sort of information you would like to get from them.
- d Conduct the interviews, making sure that you take notes. Later, expand them into a record for yourself.

## Get organized

Organize yourself. Think about how to approach your research and how to organize your data, a logbook, a provisional project schedule and interviews.

Refine your research question during the preparatory phases of your research, reaching a definitive formulation by the time your research gets underway. Make any decisions you need to make, set up a note-taking system and make interview reports. Collect evidence of your various successes and failures. It is also important to plan how much time you are able to put into the various aspects of your research. With this in mind, make a note of the activities you spend time on. Keeping a *logbook* or *research record* is a good way of doing this. Those doing scientific research in laboratories keep a record in a lab journal.

Things to note in your logbook:

- The *date*.
- A brief *description* of the activity
- What *step* of this book you have reached
- The *objectives* of the activity
- *Work methods*. How did you approach the task and what were your sources?
- *Results*. What were your findings? What decisions did you make? What mistakes did you make? In other words, mention everything that might be important.
- *The time spent in hours*.

**Logbook**

Make sure you keep your logbook up to date: it will form the basis of your research report.

- A thick A4 hard cover notebook that you can take anywhere you go is very suitable as a logbook. Make sure that you have a pen that you like writing with and write your results up neatly.
- Naturally, you could also create a logbook in the form of a text document on the computer. The website gives an example of one.

If members of the group agree to it, the following activities are also suitable for research done as a group project.

**ACTIVITY 0-4****Organize your work**

You are about to undertake a research project. The various steps and activities described in this book form a plan for the research project that you will report on according to the guidelines in Step 7:

- a** Study the research blueprint at the start of this book.
- b** Skim through this book first so that you know what to expect.
- c** Draw up a provisional project schedule showing the research activities. You will find a project schedule on the website.
- d** If you are part of a research team, make clear arrangements about how to divide the tasks.
- e** Organize a personal or group logbook.
- f** Make sure that the logbook is updated on a daily basis.
- g** Make a time record. You could do this in your logbook or via the form on the website.
- h** Decide how you will save your data files and how to back these files up. Do so regularly.

You will now have a logbook and a provisional outline of your project schedule. Each of the chapters that follow represents a separate phase of your research blueprint. The step that follows this one deals with defining your research topic and drawing up a research proposal.

## Additional exercises

The additional exercises at the end of each step are to help you consolidate your knowledge. You will have to do some research of your own or consult additional literature sources.

- 1 Think of at least two examples of research within your particular field.
- 2 Look up the following terms and define them in your own words:
  - a scientific methods
  - b double-blind experiments
  - c verification
  - d falsification
  - e empirical cycle
  - f hypothesis
  - g induction
  - h deduction
  - i objectively
  - j sample
- 3 'A researcher with integrity makes sure that his research can be refuted'. Discuss.
- 4 Karl Popper was a famous philosopher of science.
  - a Investigate what the philosophy of science is concerned with.
  - b Briefly describe Karl Popper's ideas.
  - c What do you think of these ideas?
- 5 Give several examples of quantitative and qualitative research methods and list the pros and cons of each method.
- 6 Find a couple of examples of research, preferably within your own field, in which there are issues of ethical responsibility.
- 7 In the literature you will encounter the terms 'valid' en 'validity' in various combinations. Find out what the following types of validity entail:
  - a predictive validity
  - b ecological validity
  - c correspondence validity
- 8 'Validity' can be categorized in several other ways. Find out what the following terms refer to:
  - a internal validity
  - b construct validity
  - c external validity

# Determine your topic





If you are going to do some research, you will have to take the *initiative* yourself. There is a lot involved. Before you start you will have to determine precisely what it is that you want to research. While it might be an idea that you have proposed yourself, it might be research that a teacher or client has commissioned. You will follow this up by writing a research proposal, preferably after getting the green light from your client or supervisor. You will then write a research proposal in which you clearly present the research problem in a provisional formulation and delimit your research boundaries.

The purpose of a research proposal is to obtain permission to do the research. As soon as you have obtained your client's or supervisor's approval you can get going with the next step, which is to work out a detailed plan for your research. A clearly formulated research proposal is a prerequisite for your Step 8 final product, an approved research report and possibly also a presentation of it to interested parties.

You will perform the following activities during Step 1:

- 1-1 Determine your research topic
- 1-2 Prepare for the signing-on interview with your client
- 1-3 Attend the signing-on interview and make a report on it
- 1-4 Write a research proposal and submit it for approval

Step 1 aims to deliver the following products:

- a research topic
- an approved research proposal

## Who will you have to liaise with?

Research projects often have an extensive cast list:

- The *researcher*. This is the person who performs the research in question. If you are still a student you will have to make sure that you comply with your course requirements at every step of the research. You must resist any attempt on the part of the company to direct you towards the result that it wants. Researchers must always remain impartial.
- The *research supervisor*. This is a teacher or professor who is an expert in the researcher's field of study and whose task is to support the student researcher and provide advice relating to the research content. A postgraduate supervisor is a supervisor from the teaching or professional staff who will supervise you if your research is a postgraduate research project.
- The *client*. This is the person who has commissioned the research. He is usually the one financing the project and also the owner of the research problem. If you are doing research as a course module you are unlikely to have a client.
- The *company supervisor*. This person represents the client for whom you are doing the research. It might be the client himself.
- *Colleagues in the field*. Your research will be limited to a particular area, whether it company economics, marketing, physics, business studies, health studies or some other field. You will be applying the knowledge, models, and perhaps traditions of this particular field. To

be taken seriously, your research results and the methods you have employed will have to be accepted by your colleagues.

- The *subsidizer* or *sponsor*. This is a person who provides the financial means for research to be performed. It might be your client.
- A *government body* may be involved in various capacities. It provides the legislation that all research must comply with: laws governing privacy and the use of animals in trials, for example. A government body might also subsidize the research.
- A *research bureau* performs research commissioned by organizations. Such bureaus are specialists in the collection and analysis of data. They include market researchers and engineering bureaus.
- Your *peers*. These may be fellow students who are also involved in research projects or researchers performing research of a similar nature or who have experience in the field. One of your peers might be able to provide collegial advice in the form of a so-called *peer review*.
- *Experts*. These are people who know a great deal about a particular subject. You may find yourself having to interview some experts in your field during the course of your research.
- *Respondents*. These are people who provide information for research. They include people who fill out a survey and send it back to the researcher.

## Choice of research topic

You might find yourself doing research at various times during your course. Your choice of research topic will depend on your course and the stage of your course you are at. How do you find a suitable topic?

### You can determine your own topic

You can sometimes determine your own research topic. To take an example, if you are a university or advanced professional education student you might be required to choose your own topic as part of a teaching module. A training session or course module on research or research techniques might allow you to choose your own research topic. Some disciplines might provide an opportunity to choose your own topic. What you choose might be influenced by your own curiosity about a particular subject, by a literature study of a global nature, or by situational research, brainstorming or mindmapping. If you are a student and can select your own topic, you will usually be assigned a supervising teacher or professor.

We would advise you to be proactive in looking for a suitable topic. The answers you give to following questions may be of some assistance:

- Does the subject fall within your particular course area?
- Is there anything left to research in that particular area? If the area is already thoroughly researched or the topic is too lightweight you would be advised to look further afield.
- Is the research feasible? Are you likely to be able to access the information you need? Do you have sufficient financial resources to undertake the research project?
- Is the topic relevant to your interests or to your course? Will it benefit an organization, society at large or science?

If your research project is a training project, make sure that you make yourself thoroughly familiar with any supplementary demands imposed by your course. Should it be quantitative or qualitative research, or a combination of the two? Are you required by your discipline to do a survey and analyse your findings? Are you required to gather your data by means of experiments? Are you required to use certain resources or employ certain instruments?

### **Your teacher determines the topic**

A lecturer might ask his students to perform a specific piece of research in a particular field. You may have no say in the matter or will have to choose from a short list compiled by your teacher. For the purposes of this book, that teacher can be regarded as the commissioner of your research, or in other words, as your client. In this situation too, make sure that you familiarize yourself with any supplementary demands your teacher may impose.

### **An external client determines the topic**

Your research might have been commissioned by a third party, form part of an internship or be postgraduate project. If so, you are likely to have an *external client*: a person who has commissioned you to perform a particular piece of research. You would be well advised to check that the client's demands do not conflict with those of your course.

Determine who has commissioned the research. If a company is involved, it is likely to be the managing body or head of a department. If it involves scientific research, it might be a professor or financial sponsor. The client will provide a budget (whether in the form of financial resources or paid hours of work) for your research and hence will run a financial risk. If a student is doing an internship or a postgraduate project he may be eligible for financial reimbursement and might be permitted to call on the assistance of company employees. There is always a risk that the research will not deliver anything concrete despite the time and money put into it.

The client is also the person responsible for approving your research proposal, your research plan, and eventually your research report.

### **Job-related research**

As a postgraduate, you may find yourself doing research in your profession. While your client might be the research's *initiator*, it could also be you yourself or another interested party. The client might be an internal or an external one. An *internal client* is a client who works for the organization that you also form part of. The research is likely to be commissioned by a manager, perhaps of a particular department. An *external client* is a client who is not employed by your own organization but who requires the services of a researcher or research bureau. The client will make all of the main decisions relating to the research project. He will be responsible for approving the research proposal, making sure the project is progressing and approving the research report that forms the project's end product. As such, a clearly outlined commission is crucial to ensuring that the research is done to standard. The researcher must, however, also ensure that he maintains his integrity throughout the course of the project (see previous chapter under 'The ethical researcher').

## ACTIVITY 1-1

**Determine your research topic**

- a Make sure that you have delineated a research area on the basis of the recommendations above.
- b Apply to carry out an advertised research project. Make sure to get an idea of the proposed research beforehand. You may find yourself having to compete with other applicants for the research position.
- c Obtain background information on the subject via a literature study or the Internet and structure that information using techniques such as mindmapping (see also Step 5).
- d Investigate whether there has been any prior research into your topic and whether there have been analyses and conclusions that are relevant to your purpose.

**Research supervisor**

If you are doing research as a course requirement, you may be assigned a supervisor. This is likely to be a teacher who specializes in a particular field. If you are required to perform individual or group research as part of an early module, the teacher responsible for that module might be your supervisor and as such, be available for consultation during lesson times.

A research supervisor performs three roles:

- 1 That of *expert*. A research supervisor is a specialist in his field or in doing research.
- 2 That of *coach*. In his capacity as coach it is his job to support your mental processes and to try and develop your talents.
- 3 That of *model*. A research supervisor is a professional and your model. In earlier times, this was seen as a master-disciple relationship.

If your research project is a complex one, you will need to have a lot of preliminary contact with your supervisor. His role as coach will diminish over time and you will become more independent. Your research supervisor may well be the person responsible for assessing your final results. If the research is being done as a postgraduate project, your research supervisor may be your postgraduate supervisor.

## TIP

**How to keep in touch with your research supervisor: some tips**

- Make sure that you maintain regular contact with the supervisor you have been assigned. You could send him a short update on your research twice weekly, for example, or arrange to talk to him about it once or twice a month.
- Before you start your research, make sure that you are aware of what your supervisor expects of you. He might have to assess or approve your research proposal according to your course guidelines. You may find that there is a difference between what your company expects and what your supervisor wants.

If you do not have an actual client, in what follows you can regard your research supervisor as your client.

## Preparing for the signing-on interview

To obtain approval for your research project is likely to involve an interview with your prospective client, the person who has commissioned the research. The purpose of such an interview is to establish whether the research is actually required, and if so, what provisional formulation you have given of the research problem and what makes you a suitable person to research that problem. You will, of course, also want to know what you are up against with the project. The ultimate objective of an interview of this kind and any subsequent interviews with the client or supervisor is to formulate a *research proposal*.

Prior to the signing-on interview, make sure that you collect as much relevant information about the organization, the research topic and the theories you may be applying. You might already have a good background picture if you are employed by the organization or if you are familiar with this type of research. If you prepare well you will look more professional, the interview will go more smoothly and you will be able to respond more quickly to your prospective client's questions. Good initial contact with the client and mutual agreement in relation to the project will help prevent a situation where you fail to deliver the product that the client has asked for.

Information about an organization is not only available in annual reports and brochures: the organization's website can supply information about such things as what products or services that the company supplies and to whom, how profitable the company is, how many people it employs and how many branches it has. Look in particular for any recent updates on the company. You can do this by performing advanced searches via your search engine.

## Organizational research

If you are doing research into how an organization functions you will need to make a distinction between organizational issues and your research problem. Organizational issues cannot be resolved entirely by doing research. Your research should aim to provide some insight into those issues from your particular perspective, which is informed by your area of expertise. It might be a logistical perspective, or an organizational, business economy, technical or commercial perspective. An organizational problem often represents an intertwining of differing points of view, conflicting interests, self interest and past choices, and they are not always easy to untangle. The researcher must understand that an organizational problem is a problem confronting the whole organization.

During an interview with a client, he is very likely to describe the problem as it has manifested itself in his organization. Take the example of a pharmacist whose business suffers from seasonal fluctuations: the pharmacy is busier at certain times of the year. The researcher might be given the task of making the turnover more evenly divided throughout the year. You, as the researcher, are now faced with the challenge of translating this organizational issue into a research problem and a research goal. This process is time-consuming and you will need to situate the research problem within the context of your field's research traditions.

TIP

**Looking for information: some tips**

- If you have found some useful information, make sure that the source is noted down in your logbook. Correct source references are crucial, particularly if you intend using the information in your report. Be proactive in investigating whether the source is reliable and whether the information you have found is current. Make sure that you reference the source in the correct way, whether this is APA style or some other one.
- To avoid being distracted from your purpose, work out what search terms to use *before* you go onto the Internet. Select a combination of general and specific search terms. Too much information would suggest a need for more specific search terms and too few hits the need to make your search terms more general.

## ACTIVITY 1-2

**Prepare for the signing-on interview with your client**

- a** Establish who your client is and make an appointment for an interview. If the research requires a collaboration and you already know who you are going to collaborate with, you could consider making a joint appointment with the client.
- b** Prepare for the interview by reading through all of the steps this book talks about and collect as much information as you can about the client's company and the research topic.
- c** Work out what you want to find out during the interview and put it in list form.
- d** Draw up an interview agenda.

**The signing-on interview**

The aim of a signing-on interview is to get an idea of the research assignment, what the research aims to achieve and where relevant, the organization that has commissioned the research. The interview should conclude with setting a time for these matters to be followed up. You should then write a report of the interview, and before you go on to the next step, the research proposal.

Organisations often undertake research with a variety of *objectives* in mind. They may include:

- seeing whether a drug works
- making better decisions in relation to operational matters
- developing a new product or process
- obtaining a particular certification

If the client wants you to do something that is not feasible or safe, you may have to *negotiate* during the sign-on interview. It is your responsibility as a researcher to ensure that your project remains within the boundaries of the permissible.

To be *justifiable*, a research project must comply with the following:

- It must be *objective* and independent. It is not acceptable for the client or supervisor to force his point of view in terms of how the research should be carried out as this carries the inherent risk of biased findings.
- You must be able to *corroborate* your claims using the research results.
- The research must be capable of being carried out by someone else, or in other words, the results must be *replicable* and therefore rule out chance.

Questions you could consider raising during the signing-on interview:

- What motivated the research proposal?
- Does this client want the research to be carried out from a particular perspective?
- Who will benefit from the research?
- What research methods are most appropriate?
- When does the client want the research to get underway and what is this research deadline?
- Who are the stakeholders and how will they be kept informed?
- Will it be necessary to hold interviews, and if so, with whom?
- What sort of data is needed and how will it be obtained? How accurate and current is that data likely to be?
- When would the client or supervisor like the next interview to take place and what is on the agenda for that interview?
- Will a plan of implementation or a customized design also be required?

## TIP

### Interviews and conversations: some tips

- Introduce yourself with a firm handshake. Make eye contact. Adopt an engaged posture: show that you are listening. Show respect for the person interviewing you and for his opinion.
- Only use technical terms if you really need to. If you need to use some, explain what they mean. Avoid abbreviations.
- Avoid leading questions.
- Ask open questions, or in other words, avoid asking questions that can be answered with a 'yes' or 'no' or a single word.
- Keep on questioning for as long as you need to do so. You will often find that the other person has only mentioned the symptoms and not the actual problem. Try to get to the heart of the problem.
- Every now and then, summarize what has been said so that you can check that you have understood it correctly.
- Take notice of *how* something is said as well as what is said. You will often get a lot of additional information this way.
- Remain impartial and listen critically. Avoid suggesting solutions prematurely or reaching conclusions too quickly.
- Stick to the rules governing ethical research as outlined in the first chapter (Step 0).
- You are likely to encounter reservations and sensitivities during the course of a project. Look for clues in the *body language* of those taking part in the conversation. They may give you information about possible resistances and backhold.

- Try not to be too complacent. Make sure that you understand the ins and outs.
- Listen carefully and avoid monopolizing the conversation. Be careful with how you formulate things, try to remove any reservations, try to gain the confidence of those involved, avoid negativity and try to stimulate discussion.

## ACTIVITY 1-3

**Attend the signing-on interview and make a report on it**

- a** Introduce yourself, and if asked how you intend to approach the research, you could do so with reference to the blueprint at the start of the book.
- b** As the interview is being conducted, keep the above pointers and tips in mind.
- c** Monitor the progress of the interview: go through all of the points on the agenda while keeping an eye on the time.
- d** Try to find out the client's motives. Why this particular research? What does he want to achieve? What are the likely benefits of the research? In other words, what motivated the research and what are its objectives?
- e** Try to get to the heart of the problem with your client and analyse it.
- f** Take notes and expand them later into a business-like report of the interview. Give a copy to your supervisor or clients too: it makes a professional impression as well as being a useful tool.
- g** If you are unable to get all the information you need in this one interview, make an appointment for a follow-up talk.
- h** Discuss the report with your supervisor and if needs be, make changes to it.
- i** Discuss the next course of action with the client or supervisor.
- j** If you can, think of a catchy title for your research.

**The research proposal: contents**

After you have been taken on you can start writing your *research proposal* (see Fig. 4).

A research proposal is a critical *document* on which a decision will be based and must be approved by your course, your supervisor and/or your client. Your research proposal must be able to convince these people that you can perform quality research.

Naturally, a good research proposal will also have benefits for you in your capacity as researcher. As a rule, a research proposal that has been well thought out will produce good research. If you are doing *post-graduate research*, the project must lie within your field of study and will have to meet certain standards.

A good research proposal should refer to a variety of sources and to theories that your field of research endorses.



Fig. 4 The research proposal



Starting your project is conditional upon obtaining official approval from your client.

Make sure that everything is formulated as precisely as possible. The approved research proposal that constitutes the end product of Step 1 will form the basis of the research plan that will be described in Step 2. That research plan will be an elaboration of your research proposal.

In general, your *research proposal* should consist of the following components.

### Title page

The title page should show your name (and where applicable, student enrolment number), contact details, date and a working title or short description of the topic.

### 1 Introduction

The introduction should contain an explanation of what the research entails. You could also mention your own background.

### 2 Background

This section should provide the following information:

- A description of the *environment* in which your research is being performed if this is relevant to your research project. If you are doing applied research, that environment might be the organization on behalf of which you will be doing the research; if it is scientific research, the theoretical background.

- Something about what has occasioned the proposal, or in other words, the *reasons* for it: the symptoms or phenomena that caused the client to consider the need for research. If your research is post-graduate research, your reasons for wanting to do it should be solid and the proposed project rigorous enough to be able meet postgraduate requirements. The research objectives that you will outline later should flow logically from the introduction.
- This part of the research proposal could give an outline of the provisional *conceptual model*. (See Step 2 for an explanation of this.)
- You could also include definitions of *concepts* in common use in the research area.

### 3 The proposed research

In this section, you should describe the following:

- The provisional research *objectives*. Why does the client want the research to be performed? Why is it important and for whom? The client is the ‘owner’ of the research.
- The provisional *research question*. To which questions do you intend to find answers? At this stage you could also subdivide the research question into a series of sub-questions. The researcher is the ‘owner’ of the research question.
- A preliminary description of where the research *boundaries* lie. What will your research include, and more importantly, what lies beyond its scope? In doing this you are setting limits on your research. You should also use this opportunity to describe how the provisional formulation of the problem relates to the reasons for doing the research.
- A description of the *type of research* that you intend to perform, whether it be a feasibility study, evaluating research, research to produce a design or plan, or any other form.

### 4 Your proposed approach in global terms

How do you propose to approach your research? What answers would you give to the following questions?

- What is your *time frame* in global terms? What other people need to be involved? Will the research take the form of joint project? How do you propose to work together and to assign the various tasks?
- What *research resources* and methods do you propose to use?
- What *theories* do you propose to use?
- What *literature* do you propose to consult?

### 5 Feasibility

A research project can fail to achieve its goal. The reasons may be many and varied: for example, those involved may balk at collaborating with each other, there might not be enough research data of the kind needed or insufficient funds to perform the research. At this stage, it is a good idea to think about how feasible your research is likely to be, or in other words, about any potential threats to your research.

The *BIOTAFT* factors may help you make this assessment:

- *Boundaries*. Is your research sufficiently contained? Where do its boundaries lie? What does it include and exclude?
- *Information availability*. Can the data that you need be obtained using the instruments and resources that are available to you?
- *Organizational feasibility*. The project must be able to be carried out at an organizational level. There must be sufficient resources and expertise.
- *Technical feasibility*. In other words, the research project must have the required resources, technical or otherwise, at the right time.
- *Acceptability*. Your supervisor, client and other involved parties must support what you propose to do. Your research goals must not only be ethically acceptable, they must be acceptable at a practical level. For example, is what you intend to do likely to encounter opposition from within the company's culture? Think of privacy issues, whether the research is legally permissible and whether it is objective. You will have to take account of legislation in the area of copyright and personal data registration as well as lobby groups that might object to what you propose to do.
- *Financial feasibility*. The financial resources to perform your research must be available. The costs must be in proportion to what you hope to achieve and should not discourage the client from providing the funds.
- *Time*. Do you have enough time to perform the research in the chosen way?

These factors will help you decide whether your research is feasible and what can threaten it. It is crucial that you involve your client or supervisor in assessing the feasibility of your research. Not doing so may undermine it.

Note: what we are talking about here is the threat to the research project as such, not to your research findings. If you find that a company would not be advised to open a second branch in London this is not to say that your research has failed.

#### **Appendix: data**

An appendix showing the data should include all relevant information relating to yourself, the company, the supervisors, your course and so on.

#### **Appendix: criteria**

If your research project is a postgraduate project you should include an appendix in which you list the criteria that your research is required to meet and the extent to which you have done so.

#### **TIP**

#### **Your research proposal: tips**

- Step 2 will deal with research objectives, the research problem and the conceptual model.
- The FUIK method (Verschuren & Doorewaard, 2000) provides a handy way of defining the problem clearly and in concrete terms. You could set limits on your research by electing to take a certain line of approach or a certain situation, sector or time frame.

## ACTIVITY 1-4

**Write your research proposal and submit it for approval**

- a** Collect any additional information you need.
- b** Write a research proposal according to the guidelines in Fig. 4. Base it on the discussions you have had with the client, interviews with other stakeholders and information you have collected. Make sure that your research proposal is clearly delineated. A model for writing a research proposal can be downloaded from the website.
- c** Discuss your research proposal with the person who will probably be supervising your research and if needs be, make changes to it.
- d** Discuss the proposal with your potential client.
- e** Make sure that your research proposal is formally approved by your client, supervisor and/or course supervisor.

After you have obtained formal approval for your project you will start implementing it – Step 2 of this blueprint. You will elaborate your research proposal further, ultimately coming up with a plan of attack that in research circles is referred to as the *research plan*.

## Additional exercises

- 1 Whether you have an internal or an external client will influence how you do your research. List a couple of the differences.
- 2 How can you ensure that your research is reliable?
- 3 What is the difference between a research proposal and a research schedule?
- 4 What could motivate a research project?
- 5 Explain what 'research objectives must be SMART' means using an example of your own.
- 6 If your research is being done as part of a higher professional education course, to be awarded a bachelor's degree you will need to comply with the international Dublin Descriptors. Some countries have their own core descriptors governing the awarding of a bachelor degree.
  - a Investigate what the so-called Dublin Descriptors (named after the city of Dublin) are and what their core requirements are.
  - b Which of the Dublin Descriptors relate to research?
  - c How does your research project rate according to Dublin Descriptors? Use the following rating scale: very good, satisfactory, pass, poor. If relevant, how would you improve your rating?
  - d What core requirements govern research?
- 7 A client makes the following pronouncements. What might the actual problem be?
  - a The purchasing department has not been computerized.
  - b The sales department is performing poorly.
  - c Product X has not been popular.
  - d Our organizational structure is not effective.
  - e Our clients are too old.
  - f Our customers are not coming back.
- 8 Find out how to put in an offer for a research proposition (Grit, 2008) and then present your research proposition to a prospective client. As a bare minimum, it should contain the following: the cost of the project, how the client will profit from the project and the client's obligations (such as the resources that will need to be supplied, how much time co-workers will need to put into the product and how much time the client will need to put into it).