

# Brief Notes on Research Methods (or Methodology)

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Michael Wood

University of Portsmouth Business School

<http://woodm.myweb.port.ac.uk/SL/researchmethods.htm>

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*If you have any criticisms or suggestions please let me know.  
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## Introduction

My aim here is to give a very brief overview of some of the main methodological points you should be aware of when planning your own research, or deciding whether you should trust research that someone else has done. I've just read that the advice not to eat too much salt because of the danger of raised blood pressure was misguided; salt was, the article says, wrongly blamed. Should I believe the new advice or the old advice? To come to a sensible decision you look, critically, at the research studies on which the contrasting recommendations are based - which of them are more likely to be right?

My focus is on management research, but many similar issues apply to other areas like education, medicine, or sciences like genetics.

## What is the purpose of research?

The idea of research is of course, is to make discoveries, understand things better, and in long run to improve things.

It's useful to make this a little more definite by thinking of what the outputs from a research project might be. I can think of four possibilities:

- 1 Discovering the *truth* about something
- 2 Creating, modifying or justifying a *theory or model* of something
- 3 Finding a *good, or better, way of doing or implementing* something
- 4 *Creating something* like a computer program for stock control, or a training course.

This is a rather muddled list, it's probably not complete, and the categories may overlap. The outputs may be in the form of a report for the audience to read (about the truth for example), or a computer program, or some teaching materials, or a combination of several of these.

What is definitely worth noting is that there are two, apparently very different, criteria for evaluating these outputs. The first is "Is it true?" And the second is "Is it useful?" The relationship between these two is subtle and need not concern us unduly here, except to remember that, ultimately, the aim of a research project is usually to improve the future by finding out how to manage better. This might be directly by 3 or 4 above. Or it might be indirectly by a better understanding of the present situation (1), or better theories about how things work (2). So in this sense at least, usefulness is the primary aim.

The usefulness criterion begs the question: useful for what? What is it that we value - happiness, money, or whatever? And whose happiness, or whose money matters? These value judgments needs very careful consideration.

## What is special about academic research?

The word academic comes from Plato's Academy in ancient Greece which is seen as a forerunner of modern universities. "Academic" research means research that is good enough for a university. Such research must be

- Systematic and as thorough and trustworthy as possible
- Clearly written and with sufficient detail for readers to check things like the sources of information
- Ethical

We'll look at how to achieve this in practice below. The main thing is to write for a "critical" reader: someone who is sceptical about your work and needs to be convinced that your conclusions are justified. Imagine the objections this person might have, and try to answer them.

Above all, remember that the results of research should be trustworthy, right or useful (which word makes most sense depends on the research). Suppose that you see a research report that claims that a new computer based course is highly effective for training sales staff. Before believing the research, and investing in the new course, you would want to check if the research is done in a sensible way. If you found that most of the evidence came from interviews with the developers of the course, you would suspect that the results might be biased! Similarly, if the people used to test the course were all computer games addicts, you might wonder whether the results would be the same with other people.

## How to do research and sources of advice

The obvious approach is:

- 1 Decide what you want to achieve - the *aims* of the project, or the *questions* it will answer.
- 2 Decide how you are going to achieve these aims or answer these questions - the *design* of your research project and the *methods* you will use.
- 3 *Do* the research and *analyse* the results
- 4 State the *conclusions and recommendations*.
- 5 Check that you have in fact achieved the aims of the project. If you have not, work out your excuses, try again, or pretend that you were really trying to do something else – i.e. change your aims to fit what you actually did (this is often acceptable).

One difficulty with this is that you may not know exactly what you want to achieve at the outset. Or you may change your mind about your research aims, or the best methods, as you do the research. In general, it is best to plan your research in advance as far as possible, but be flexible and expect to change your mind to some extent.

You will find many books on research methods in the library. Saunders et al (2007 or later edition) is a popular, student-friendly book; Robson (2002) is better on the more advanced concepts; and there are many others. You won't need to read them from cover to cover; just read the sections which are relevant to your project.

In addition to books on research methods, you will also need to read articles about your research topic. Many of these articles will discuss the methods used by the authors in doing their research.

*And besides these, don't forget your common sense. How to do research is mostly fairly obvious – don't allow the jargon in the books to make you forget this! Your starting point should always be common sense (link to come).*

## What are the different types of research?

There are many approaches to research, and many different types of analysis that count as research. Some of the commoner ones are listed below, but no list like this can be complete. Obviously, the summaries below are very brief: you should read up about the approaches that seem most suitable for your research.

- Large scale surveys (of people, organisations, events, etc) analysed statistically (see most research methods books). The advantage of a big sample is that you get more of the overall picture, but this picture may be a bit superficial.
- Small scale surveys with emphasis on “qualitative” or “rich” detail (see most research methods books). The problem here is that the smallness of the sample may mean that it is difficult to know how typical your results are, and how far your results can be generalised. On the other hand you will learn in more depth about your small sample. The choice may be between learning a little about a lot, or a lot about a little. Both have obvious advantages and disadvantages.
- Case studies – to see how something works in detail (see most research methods books). This is a respectable type of research, and often very helpful to explore in detail how something can work in practice. It is important to use several sources of data for an in-depth analysis of the case.
- Experiments (see most research methods books; Ayres, 2007; Wood, 2003, Chapter 10 - <http://woodm.myweb.port.ac.uk/nms.pdf>; or search the web for "design of experiments"). The simplest type of experiment involves comparing two groups which differ in just one way. For example, one group of people used one version of a website, and a second group used a second version. If the second version of the website is more effective than the first (perhaps the second group buy more), then if the groups are big enough and we are sure there are no other systematic differences between them, we can conclude that the difference in the websites *causes* the difference in effectiveness. It is important that people are *randomly* assigned to the two groups to ensure that there are no such systematic differences. Widely used in medicine where they are called *randomized controlled trials*. Often difficult to arrange in management, although they are suggested by the British Government for testing to see if policies are likely to work – see <http://www.cabinetoffice.gov.uk/sites/default/files/resources/behaviour-change-and-energy-use.pdf> ). Hadfield (2000: <http://www.newscientist.com/article/mg16822681.400-drink-to-think.html>) and Heras et al (2002: <http://tinyurl.com/ydxn8jh>) describe research where experiments might help – in principle, but in practice there may be difficulties.
- Quasi-experiments (see Robson, 2002: 133-154; Grant & Wall, 2008). These are experiments which are not proper experiments because some of the variables are not controlled – often randomization of groups is not possible.

One common possibility is a comparison of something before and after a supposed improvement – this is described as a design to avoid by Robson (2002: 139) but it may still be worth doing if you remember that there may be a number of different reasons for any improvement you find.

- Models can be set up, and tested (see the literature on the particular type of model). For example you might set up a model for stock control, or monitoring quality, or buying portfolios of shares, and then test whether your model is useful.
- Action research – combining the roles of researcher and actor (see most research methods books). There are obvious advantages, but also equally obvious problems (mainly the possibility of bias), with this approach to research.
- ... and many other possibilities ... be imaginative! Browse the research methods books, or *devise your own methods to fit your particular research*.

*Many projects combine several of these approaches, as this is usually the best way to get useful results about a real situation.*

## Sources of data

The word “data” refers to information about the real world. All of the types of research listed above need data. It is important to be open minded about possible sources of data.

The obvious possibilities include:

- Interviews – including various approaches to eliciting comments – e.g. “photo elicitation”.
- Questionnaires, including via email. It is more difficult to design a good questionnaire survey than it may seem. Read a book for advice, and do a pilot and learn from it (and see below).
- Various structured techniques for getting information and views from groups of people – e.g. focus groups, Delphi technique (Robson, 2002:57), brainstorming, etc.
- Observations of various kinds, including participant observation – which has obvious advantages but also problems.
- Documents and archives (minutes of meetings, company reports, etc)
- The web
- Databases – within organisation, of share prices, etc
- Published data and statistics (e.g. at <http://www.statistics.gov.uk/> and <http://www.data-archive.ac.uk/> .)
- Etc .... Be imaginative!

Sometimes a distinction is made between primary data – which you have collected yourself for your research – and secondary data – which has been collected by someone else. Secondary data may be available in published case studies or statistics. If you can obtain suitable secondary data, it would obviously be stupid not to use it. However, often

you will need to collect data about the specific situation of concern to your research, and so you will need your own (primary) data.

You will find more detail of these in any book on research methods. With many of these approaches you will need to consider (and discuss in your written report) the practical organization of how the interview (for example) was run, the possibility that the questions asked might bias the answers, and so on. It is also good practice to give readers access to at least a bit of the “raw” data (copies of questionnaires, transcripts of some interviews, etc) so that they can see in detail what you did. This might be in the appendix or on a website – you should mention this in the text so readers know where to look.

Questionnaires may seem easy to produce, but they are very difficult to design well.

Points to remember include:

- If possible use, or adapt, someone else’s questionnaire, particularly if they have tested it thoroughly. You may need to get permission, but this has several obvious advantages.
- Do a pilot of the whole process including the analysis – i.e. try it out with a small group (possibly friends if they have the right background). Include yourself in the pilot! This should enable you to find and correct many problems.
- Consider an online or email survey – Google Forms (click on Documents in your Gmail home page, then Create new – Form) is worth considering. (The free version of Survey Monkey is useless: you will need to pay if you use this.)
- Keep it as simple and short as possible. This is difficult but very, very important. The questions should be phrased in the simplest way you can to avoid misunderstandings. Avoid leading questions like “Explain why you like the new strategy” or “When did you last beat your husband?” – perhaps some respondents don’t like the strategy or don’t have battered husbands. And check each question to see if you need the answer: if you don’t, delete the question.
- You need a short, clear, polite, grateful covering letter, perhaps offering a summary of the results.
- Remember the problems of sampling (is your sample likely to be biased?), persuading people to fill it in, distributing it, getting the results back, etc.
- Consider interviewing people instead.
- Use closed questions (tick the box, or circle a number on a scale) when possible because they are easier to analyse, but it is usually a good idea to include a few open questions which people answer in their own words: e.g. “Is there anything else you can tell me that may be of interest?”
- Think about whether you want to ask what respondents did yesterday, what they usually do, what they think, what they think other people think, what they think the answer to your research question is ... and remember that they may not have anything sensible to say.
- Questionnaires are hard work to organise, people hate filling them in, and the results are often superficial and disappointing. According to Salancik (1979) they are mere “autoerotic fantasies”. Are you sure you really want to do one? There may be other possibilities.

## Choosing a topic to research

The main things to consider are:

- Usefulness and interest. Will the results be useful? Will they make the world a better place? Or will readers just be left asking “So what?” or “I know this already.” Will acquiring a state-of-the-art expertise in the topic help your career?
- Feasibility. Are you likely to be able to get the data, etc to research the topic properly? The project should be reasonably challenging, but not impossible.

## Research aims or questions

What do you want to achieve by doing your research? Perhaps you want to devise a good way of managing innovation in a particular context, or to see how a product can be marketed more effectively, or to investigate stress in a particular type of work with a view to alleviating some of the problems. The starting point of your project should always be the outcome that you want to achieve – this should then be the basis of your research aims or questions.

Sometimes the research aims or questions are quite clear. More typically, a research project may start from a fairly fuzzy problem or area of concern; it is then necessary to decide on a clear focus by formulating some more definite aims or questions. *It is almost always better to focus on a limited area so that you can do a thorough job, rather than having a broad focus with inevitably superficial results.* Unless, of course, you think you can crack the big questions, in which case, good luck!

You also need to answer the question of *why* your aims are important. They may be of importance to your organization, they may be important to you, or they may be an important contribution to the literature – you may want to test or extend or create a theory or model. The important thing is to make sure that the practical outcomes of your research are likely to be useful to someone. Your personal aims for doing the project - perhaps to pass the course and acquire a marketable skill - are, of course, distinct from the research aims of the project.

The focus for your research project, its goals, can then be formulated in any of the following ways:

- Question(s) to be answered: eg *What is the best quality strategy for ABC Company?*
- Aim(s) (or objectives) to be achieved: eg *To devise the best quality strategy for ABC Company.*
- A hypothesis or hypotheses to be tested: eg *Strategy X is the best strategy for ABC Company.* (A hypothesis is a statement whose truth you want to test.)

Aims and questions are more or less equivalent. Whether you express your goals as a list of aims or as a series of questions does not matter much. There is no point in doing both, of course.

*However, in general, I would advise you against formulating the aims of your project as a series of hypotheses to be tested.* Testing hypotheses in management is more difficult than it may appear, and the results of the research become a simple list of True/False statements – which may not be terribly useful. But, of course, there are exceptions.

Despite this, it may be useful to have an *informal* hypothesis - eg TQM is helpful - to guide your research. Then you can formulate some more detailed aims spelling out which aspects of the helpfulness of TQM that you wish to investigate. You may also have hypotheses you wish to test as a part of addressing your research aims. For example, you may wish to test the hypothesis that there is no difference in effectiveness between two procedures.

It is a good idea to summarize the main aim of your research in a single phrase or sentence – for example:

- To devise and justify a better marketing strategy for Company X.

This may then be broken down into subsidiary aims that will help you to achieve your main aim –

- To measure the effectiveness of the existing strategy
- To investigate the approaches used by other organisations and their effectiveness
- To devise some suggestions for improvement
- To see how effective these improvements are.

You may also want to use your results to improve the relevant academic theory, so that your results can be applied to other organisations:

- To modify an existing / create a new model for designing marketing strategies in a given sector

This is roughly the pattern of many student projects in management (if you swap marketing for HRM, quality or whatever).

The research aims or questions should

- *be as simple and clear as possible;*
- *be coherent (fit together),*
- *refer to practical and/or theoretical outcomes;*
- *be listed near the start of the project report.*

You will also need to make the *scope* of the research clear (will it refer to one company or be broader, for example?) and clarify the meaning of any key terms used.

Try to envisage the sort of conclusions which you might expect to arrive at. Then ask yourself:

- *Are you likely to be able to get the evidence to justify these conclusions?*
- *Are the conclusions worth the effort. Put yourself in the position of a critic who says, simply, "So what?".*

At the end of the project report, you should have a clear section explaining how you have achieved the aims (or answered the questions) laid out near the beginning. (If you find that you have not achieved the aims you originally set yourself, but have achieved something else, then rewrite your aims so that the project makes sense to the reader!)



## Research design: choosing the right methods to achieve your research aims

Go through each of your aims and decide on the best methods to achieve them. For example, if the aim is to find a good strategy to "improve" X in Organization Y, then a possible design may be:

1. Survey/case studies of Organization Y to investigate problems and opportunities
2. Survey/case studies to see how other organisations do X and which approaches work well
3. Based on (1), (2), the literature, and perhaps creative inspiration, consultations within the organisation, simulation or modelling, devise a strategy likely to improve X
4. Try/test/pilot/monitor the proposed strategy, probably in a limited domain

This is fairly general pattern for many management projects, although for practical reasons (like the time available) you may not manage to do all four parts.

One of the problems with a lot of management research is that it concerns the future – typically the goal is to improve life in the future. The future, of course, has not happened yet, and so is difficult to research; I have explored some possible methods for researching the future in <http://woodm.myweb.port.ac.uk/NotHappened.ppt> .

If you have several aims you should write down the methods to achieve each of them. This will probably involve several different methods.

Designing research is not easy. Think hard about what will work best. Then check to see if you can spot any difficulties. Then work through the checks in the next section and the linked document. Then think again!

## How to make sure your research is useful and trustworthy

Some research is not really useful, either because no practical recommendations follow from it, or because it's obvious stuff that everyone knows without formal research. And some research is not done with sufficient care to make it trustworthy. What are the things you should check?

I have put my answers to this question in another document at <http://woodm.myweb.port.ac.uk/rm/u3critic.pdf> . I think the most important things to check are:

- Have you got (or are you likely to get when you've done the planned research) trustworthy answers to questions about the *Causes* of success and failure? If you want to make recommendations you need to get this right. Otherwise your

recommendations aren't likely to work. It is easy to jump to the wrong conclusions: imagine an alien landing on earth, noticing that people with broken legs tend to have them encased in a plaster cast, and concluding that it is these plaster casts that break people's legs! Take care. Often a controlled experiment (see above) is the only foolproof way of establishing what causes what.

- Are the samples of data you are using chosen in such a way that they are likely to be *Representative* of the pattern in the wider world? If your sample is biased, or too restricted, your results may be useless. It is *always* a good idea to think long and hard about your sample, particularly if your sample is small. This is particularly important for samples of one – typically known as case studies.
- Are the measures or performance *Indicators* used to assess things sensible? If your research concerns quality and profitability, have you got valid ways of measuring these? If, for example, you assess company performance by asking for the opinions of managers in the company, your results are likely to be biased and useless.

These are discussed in more detail, and there are some more things to check, at <http://woodm.myweb.port.ac.uk/rm/u3critic.pdf> . (The italicised words above are the first three words of the acronym CRITICAL in this document.) These are very important if you want people to believe in the value of your research. They should be discussed somewhere in your project. They are also a useful checklist for assessing the credibility of other people's research.

## Analyzing data

It is difficult to generalize about analyzing your data and deriving conclusions from it because the best way to do it depends on your particular research. However there are two common types of analysis.

First, there is *statistical* analysis. This ranges from tables of averages and bar charts to complex methods such as factor analysis and multiple regression. There are some suggestions at <http://woodm.myweb.port.ac.uk/stats/StatNotes0.pdf> .

Second, you may have “qualitative” data (words or speech) from interviews or from open-ended questions in questionnaires. You will find various suggestions in the textbooks. On a simple level, I would suggest:

- If you have a lot (say 20+) of cases, it may be worth *coding* your data, and then analysing it statistically. For example, suppose you have asked college students who have left their course about the reasons for leaving. You could then categorise them into categories like “didn't like course”, “found a job”, etc, and analyze the frequency of each category. If you do this you should check the *reliability* of your categorization by getting another judge to check how you have categorized a sample of your sample.

- If you have two more cases, it may be worth making a *data table* with each case on a separate row, and each question or other bit of information in a separate column. Then in each cell you can make a note about how Case X answered Question Y. This should help you to spot and analyze any patterns.
- You can also treat each interview, or other bit of data of whatever kind, as a case to help you explore particular possibilities. Suppose you are researching the impact of mobile technology on work-life balance, and find that one of your interviewees has reduced their time in the office by 80%. This might be an interesting case worth exploring in detail for what it might teach others about the possibilities offered by the technology. Tell the story using direct quotes when possible – because this makes it clear that you are simply reporting what your interviewee said, not putting your own interpretation on it. Obviously this person may not be typical, and statistics are irrelevant with a sample of one, but the information could still be very useful.

(A distinction is sometimes made between “quantitative” (statistical) and “qualitative” *research*, as opposed to types of analysis. In my view, this, and similar distinctions are not helpful and best avoided – see Wood and Welch, 2010 for the reasons.)

Whatever you do it is important that you include full details of the evidence and its analysis in the main text of your project report – e.g. key quotes from interviewees, tables and diagrams showing the statistical analysis. The idea is to explain how you analysed your data to arrive at your conclusions, in sufficient detail to convince the reader. Extra details can go in the appendix, but the main story must be in a chapter called Analysis or something similar. Otherwise your readers may not believe your conclusions.

It is a good idea to analyse the data from a pilot study. You may only have three questionnaires, but you should still try and analyze them. This should help you see whether you are collecting the right data to answer your research questions!

## Practicalities

Research tends to take longer than anticipated, so plan the timescale carefully. Some people use a bar (Gantt) to plan the timing.

Remember that getting access to information may be difficult, and you need to consider carefully how to deal with issues like anonymity and confidentiality.

Don’t forget requirements like ethics, maximum length etc.

Get the referencing right (Harvard is easiest – see <http://www.referencing.port.ac.uk/> ).

Remember the rules about plagiarism. Software is available if you want to check – see [http://www.elearning.port.ac.uk/elearning/turnitin/turnitin\\_students/turnitin.html](http://www.elearning.port.ac.uk/elearning/turnitin/turnitin_students/turnitin.html) . If you would like to use this there should be a link in the MBA and MSc Victory Portal.)

Think about your writing style. There are different views here (check with your supervisor), but be very careful with phrases like “I think ...” because this may be taken to imply that it’s just your personal opinion without any supporting evidence. Try to use phrases like “These results mean that ...”. On the other hand, when describing the background motivation for your project, it is reasonable to talk about yourself: “I work in ... and a major problem we have is ...”. (Some say that you should use a phrase like “the present author” instead of the pronoun “I”, but the present author thinks this is just silly because it is awkward English and means exactly the same as “I”.)

The standard layout for a project report is:

- Abstract (short summary of project including conclusions)
- Background and aims (what you’re trying to find out and why it’s important)
- Literature review (of relevant previous research which you will build on, modify or extend; should be firmly focused on your research area, and be “critical” in the sense of evaluating the strengths and weaknesses of the work discussed – see, for example, Saunders et al, 2007, chapter 3)
- Research design and methods – plan and justification (what you did to meet the aims, and why it was a sensible approach)
- Analysis (should show how you derived your conclusions and recommendations to convince sceptical readers and impress examiners; important tables, diagrams etc must be in the text, details in appendix)
- Results, conclusions, recommendations, limitations, further research. Make sure these match your aims.
- References (list only works cited in text in alphabetical order)
- Appendices – Ethics form, extra details for the reader like questionnaires, interview questions, sample transcripts, etc.

Some projects may not fit this pattern (e.g. “flexible designs” – Robson, 2002) so adjust it if necessary, but make sure that everything above is covered somewhere.

## **Philosophical issues**

You will find discussion in many of the research methods texts about the philosophy of research based around concepts such as positivism, phenomenology and social constructivism.

A lot of this comes down to the distinction between two approaches to research – often called quantitative and qualitative. Obviously research is sometimes quantitative in the sense that it involves statistics, and sometimes qualitative in the sense that it involves a detailed analysis of the qualities of a small sample. However, in my view, drawing a rigid distinction between quantitative and qualitative approaches to research is not a good idea – the reasons are explained in Wood and Welch (2010). Similarly, the concepts listed in the paragraph above are, in my view, best avoided. Very few articles in management research journals refer to these concepts; you do not need to either. (Unless, of course, you feel a burning interest in them, in which case, please read beyond the standard textbooks – there are some suggestions in the references in Wood and Welch, 2010.)

Despite this, there are some philosophical issues which are worth considering. Philosophy was defined by Wikipedia when I checked as "the study of general and fundamental problems" - and research methods certainly raise many such problems. I've listed a few of the things I think are worth pondering in Wood and Welch (2010).

## Exercises

1. Choose an academic journal article (one that presents some research, not a review article), read it and answer the following questions:

- Is the research useful and clearly presented?
- What data (if any) does it use?
- What type of analysis does it use (statistical, qualitative, or ...)? Any comments on the analysis?
- Do you believe it? Do you accept the conclusions? Are there any reasons to doubt the validity of the conclusions?
- If you had done the research, would have done anything differently?

There are a lot of research articles you could choose. Ones that I've looked at seem to me to illustrate interesting points include: Possibilities are Britten et al (2000), Glebbeek and Bax (2004), Meyer and Altenborg (2007), Moreno-Luzon (1993), Moutafi et al (2007).

2. Formulate some aims, or questions, for a research project. Check that they are as clear and simple as possible. Do they hang together? Are they feasible?

Now imagine you've got the results, and write a paragraph explaining the conclusions and recommendations. (Obviously you will be guessing!) Does this make the research seem useful?

3. Design a research plan for one of the projects below, **and do a pilot study for part of it – this should include a rough analysis of the pilot data.** (You may find you need to make the aims / questions more precise.)

**PhD website.** The provisional aims are:

1. To evaluate the suitability of the PBS website for prospective PhD students
2. To suggest improvements to the website from this perspective

**The impact of smart phones and other mobile technology on family/work-life balance.**

What are the problems and opportunities, and what would you recommend?

**Email Project**

How much time do "people" spend on emails? Is it time "well spent"? If not how can things be improved?

4. Journalists sometimes do research that involves going under cover. For example, in 2003, a BBC documentary revealed “horrendous” racism among police recruits (<http://news.bbc.co.uk/1/hi/uk/3203287.stm> ). What do you think of this as research?

- Is it useful research? Is it credible?
- Is it ethical?
- Does it matter that there was only a single reporter investigating one training course?
- What else would be necessary if this research were to be presented as a Master’s level research project?

5. I have used phrases like “I think ...” and “in my view” in these notes. Do you think this is justified in view of what I have said above about writing style?

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