3 Developing Research Aims and Objectives

Topics covered in this chapter

- Why defining your research objectives is important
- How to develop and write good research objectives and questions
- Common errors when writing research objectives
- Linking research objectives to research methods
- Developing research objectives for exploratory studies

A crucial task in any research project is defining its core objectives or questions. What is the central goal or purpose of the research? What research topics, questions or problems does the project intend to address, and why? Many projects get into difficulty because not enough time and thought is devoted at the start to properly defining the project's research goals. As a result, precious time and resources can be wasted collecting irrelevant or unnecessary research data.

This chapter looks at the process of defining a project's research objectives and questions. It offers tips on how to ensure your research objectives and questions are well thought out and clearly expressed. It also provides examples of well-written and not-so-well-written research aims and objectives, as a guide for people who might be struggling to get their aims and objectives down on paper.

What are research aims, objectives, questions and hypotheses?

In a research context, the terms 'research aim', 'research objectives', 'research questions' and 'research hypotheses' tend to have specific meanings. Table 3.1 defines these commonly used research terms. Study these definitions so you can apply them appropriately in your work.

Research aim

The term research aim usually refers to the main goal or overarching purpose of a research project. Sentences stating the aim of a project are usually quite brief and to the point. An example is:

Aim: To investigate factors associated with partner violence.

Because of their generality, research aims are almost always positioned at the very beginning of a statement of research aims and objectives (or questions). They are broad and introductory rather than specific and focused.

TABLE 3.1 COMMONLY USED TERMS RELATED TO RESEARCH AIMS

Term	Definition
Research aim	A statement indicating the general aim or purpose of a research project. Usually a research project will have only one broad aim
Research objectives	Specific statements indicating the key issues to be focused on in a research project. Usually a research project will have several specific research objectives
Research questions	An alternative to research objectives, where the key issues to be focused on in a research project are stated in the form of questions
Research hypotheses	A prediction of a relationship between two or more variables, usually predicting the effect of an *independent variable* on a *dependent variable*. The independent variable is the variable assumed to have causal influence on the outcome of interest, which is the dependent variable

Research objectives

A research aim will usually be followed by a series of statements describing a project's research objectives. Research objectives indicate in more detail the specific research topics or issues the project plans to investigate, building on the main theme stated in the research aim. Normally at least two or three research objectives will be stated. It is good practice to put these in a numbered list so they can be clearly identified later in a proposal or report. Here is an example of a set of research objectives:

> Objective 1: To examine whether alcohol consumption is associated with increased partner violence.
> Objective 2: To examine whether labour force status (employment, unemployment, not in the labour force) is associated with variations in the incidence of partner violence.
> Objective 3: To explore differences between couples with an extended history of partner violence and couples with only a brief, recent history of partner violence.

Research questions

In some situations, rather than stating research objectives, researchers will prefer to use research questions. In the example below, the objectives stated in the previous example are reframed as research questions:

> Question 1: Is alcohol consumption associated with increased partner violence?
> Question 2: Is labour force status (employment, unemployment, not in the labour force) associated with variations in the incidence of partner violence?
> Question 3: Are there differences between couples with an extended history of partner violence and couples with only a brief, recent history of partner violence?

Research hypotheses

Research hypotheses are predictions of a relationship between two or more variables. For example, a research project might hypothesise that higher consumption of alcohol (an

independent variable) is associated with more incidents of partner violence (the dependent variable). Data would then be gathered and analysed statistically to see whether the results support the hypothesis or not.

> Hypothesis 1: Higher consumption of alcohol will be associated with more incidents of partner violence.

It is important to note that even if a research hypothesis is supported by the statistical analysis, it does not necessarily confirm that the independent variable (e.g., higher alcohol consumption) *causes* the differences observed in the dependent variable (e.g. partner violence). Establishing causation requires rigorous research designs (such as experimental designs) and more than one study.

In general, hypotheses are used only in quantitative research, not qualitative research, and normally only when previous research, or a literature review, indicates a specific prediction is warranted. Some studies present hypotheses instead of research objectives, while others present a combination of research objectives and hypotheses.

How to develop and write good research aims and objectives

Good, clear statements indicating a project's research aims, objectives or questions do not normally spring forth fully formed in a sudden eureka moment. They tend to emerge slowly, after considerable thought, and take time to develop and finalise.

When first designing a project, try to give yourself plenty of time to think through your aims and objectives. Ideally, this thinking should not be done in a hurry or under pressure. Read around your subject. Analyse previous studies in the area. Look at how other researchers frame their aims and objectives. What key technical terms or concepts do they employ? The better you understand the published literature on your topic, the more likely you are to be able to effectively conceptualise your own research aims and objectives.

If you are doing a formal literature review as part of your study, try to link your research objectives directly to the main conclusions of your review. This can strengthen the case for your study by showing how your research objectives build on the current state of knowledge. (For guidance on how to do a literature review, see Chapter 7.) When reviewing published articles on research topics similar to the one you are planning, look at how the authors have phrased their research objectives. Taking objectives or questions from an existing study (e.g., Box 3.1) and reviewing how clear they are, can help you think about how to frame your own research objectives.

Box 3.1 Example of research questions

1. Does students' fruit/vegetable intake vary between schools and does this between-school variation remain after adjusting for the student composition of schools?
2. Are school-level effects consistent across different measures of fruit/vegetable intake?
3. Does school availability influence intake of fruit/vegetables among boys and girls differently?

4. Do students from homes with low availability consume more fruit/vegetables if enrolled in schools with high availability of fruit/vegetables versus schools with low availability?

Source: Krølner, Due, Rasmussen, Damsgaard, Holstein, Klepp, et al., 2009, p. 1417

Another important way to help clarify your research aims and objectives is to write them down and ask other people to comment on them. Draft up an initial statement of your aims and objectives. Revise it until you are satisfied with it as an opening or provisional attempt to describe your goals. Show it to colleagues, supervisors, friends and family. Ask them what they think. Do they understand what you mean? Do they agree with the particular objectives you have chosen? Do they regard them as feasible?

Use all the feedback you get from other people as a basis for critically assessing the clarity, relevance, logical consistency and practicality of your research aims and objectives. This should help ensure your project starts off on the right foot and minimise the scope for you (or other people) to later become dissatisfied with your stated research goals.

Common errors when writing research aims and objectives

The clarity and precision of a statement of research aims and objectives can be reduced in a number of ways. Examples of some of the more common errors are shown in the boxes below. Reflect on these and try to avoid them in your own work.

One quite frequent error is collapsing all the information on a project's research aim and research objectives into a single paragraph (see Box 3.2). This makes it hard for readers to absorb the information and distinguish the project's overall research aim from its more specific research objectives. A project's general research aim and specific research objectives should be clearly distinguished. Present them in separate sentences or paragraphs. Each research objective should be numbered.

Box 3.2 Single statement combining aim and objectives

This project aims to investigate factors associated with partner violence and in particular whether alcohol consumption and labour force status (employment, unemployment, not in the labour force) is associated with increased partner violence, and whether there are differences between couples with an extended history of partner violence and couples with only a brief, recent history of partner violence.

Another common error is phrasing research aims or objectives in such a way that their meaning is vague or ambiguous (see Box 3.3). It is important that a final statement of research aims and objectives minimises the potential for misunderstanding or misinterpretation by readers.

Box 3.3 Ambiguous aims

This project aims to investigate partner violence and:

1. Alcohol consumption in couples with a history of partner violence
2. The labour force status of couples engaged in partner violence
3. Couples with an extended history of partner violence and couples with only a brief, recent history of partner violence

Occasionally, a mix of research objectives and research questions will be presented as a single list (Box 3.4). This can be quite confusing and difficult to follow. A better approach is to list only a series of research objectives or only a series of research questions.

Box 3.4 Mixing objectives and questions

This project aims to investigate factors associated with partner violence. More specifically, it aims to:

1. Examine whether alcohol consumption is associated with increased partner violence.
2. Is labour force status (employment, unemployment, not in the labour force) associated with variations in the incidence of partner violence?
3. Are there differences between couples with an extended history of partner violence and couples with only a brief, recent history of partner violence?

Another reasonably common error is confusing 'research objectives' with 'project objectives'. As indicated above, research objectives refer to the areas of knowledge the project is aiming to build on or advance. Project objectives are something quite different. They are the practical steps involved in getting the day-to-day work of the project completed. Examples of project objectives include completing fieldwork or interviews within a scheduled timeframe, writing a project report, or communicating project results to different audiences.

Occasionally, researchers incorrectly include project objectives in their statement of research objectives. In the example shown in Box 3.5, the first objective is a research objective, the second and third objectives are project objectives. Combining research and project objectives in a single list is not appropriate as the focus of the statement should be the project's research goals, not processes associated with the management of the project or the dissemination of findings. Project objectives should be listed separately in the project management section of a research proposal and linked to a project timeline.

Box 3.5 Mixing research and project objectives

This project aims to investigate factors associated with partner violence.

Objective 1: To examine whether alcohol consumption is associated with increased partner violence.

TABLE 3.2 RESEARCH OBJECTIVES AND DATA COLLECTION METHODS FOR A STUDY OF WALKABILITY IN URBAN ENVIRONMENTS

Research objectives	Data sources (samples)	Methods	Examples of questions
1. To examine the specific factors that influence people to walk in urban environments	Pedestrians and drivers of motor vehicles	Interviews	What makes it more likely for you to walk? What places or routes are you most likely to walk? Why do you walk in these places? What places would you not walk? Why?
2. To identify what physical features contribute to the walkability of urban environments	Pedestrians Urban planners	Interviews Key informant interviews	What aspects of the physical environment make it easier for you to walk? what places do you most often see people walking?
3. To identify what physical features relating to walkability can be enhanced by urban planners	Urban planners	Key informant interviews	What are some examples of physical changes which have increased the number of people walking?

Objective 2: To complete face-to-face interviews with a purposive sample of 10 couples with a history of partner violence by 20 September 2010.
Objective 3: To present the final results of the study to a meeting of representatives of key stakeholder groups in December 2010.

Linking research objectives to research methods

Having a clear understanding of a project's research objectives or questions paves the way for other important decisions about the design and running of the project. This includes decisions about which populations or demographic groups to include in the study and what data collection methods to use.

In some poorly designed studies the research methods chosen for the study do not properly match the research objectives. As a result, the data obtained often does not directly address the research objectives. Think carefully about the relationship between your research objectives or questions and your choice of research methods. Aim to describe as clearly as possible how the sampling, data gathering and analysis methods you intend to use will help meet each of the research objectives or questions.

An example of a description of the links between research objectives and research methods is shown below in Table 3.2. It refers to a project interested in identifying factors that may encourage people living in urban environments to go walking more often than they normally do. In the table, each research objective is linked to the specific samples of people from whom information will be gathered. Also shown are the data gathering methods that will be used (interviews), plus some examples of topics or questions that

TABLE 3.3 RESEARCH QUESTIONS AND DATA COLLECTION METHODS FOR EVALUATION OF A TRAINING PROGRAMME

Research questions	Data sources	Methods
1. To what extent is the training delivered as planned?	Trainers and training sessions	Key informant interviews Training documents Observation of training sessions
2. What innovations or adaptations not in the original plan are used by trainers when delivering the training programme?	Trainers and training sessions	Key informant interviews Observation of training sessions
3. What resource and implementation issues arise during the training programmes	Training manager and trainers	Key informant interviews
4. What do programme participants report as their most important learning outcomes?	Programme participants	End of workshop and 6-month follow-up surveys
5. Do programme participants identify any limitations or gaps in the training programme?	Programme participants	End of workshop and 6-month follow-up surveys
6. To what extent do participants report using their learning in practice?	Programme participants	6-month follow-up surveys
7. To what extent will the training programme be suitable for use by other practitioner groups?	Training manager and trainers	Key informant interviews

could be covered in the interviews. This helps show the logical connection between the research methods chosen and the project's research objectives.

Developing a table such as this is recommended for researchers starting out on their first project, to check that the proposed data gathering methods will clearly produce data that addresses the stated research objectives.

Another example of how to link specific research objectives to data gathering methods is shown in Table 3.3. In this example, the project topic is an evaluation of the effectiveness of a training programme. The table indicates the links between each of the project's seven research questions and the different data sources and data gathering methods to be used during the evaluation.

Developing research objectives for exploratory studies

In exploratory studies, research aims and objectives may need to be framed in a relatively open-ended way. In these studies, researchers are usually investigating a topic about which very little is known. For this reason they may want to keep their initial research aims and objectives reasonably non-specific or general, or perhaps include an option to alter their original research objectives if the project reveals unexpected information. This way of doing things is particularly common in qualitative, open-ended research studies, especially those conducted as a preliminary to designing larger, more structured or intensive studies on new or emerging issues. Some examples of objectives from qualitative exploratory studies are shown in Box 3.6.

Box 3.6 Examples of research objectives from exploratory studies

… we set out to explore how evidence of serious adverse effects from SSRIs [selective serotonin reuptake inhibitors] is managed by those who have a professional stake in using or promoting the drugs. Specifically, we were interested in identifying and unpacking the rhetorical strategies available in response to the dilemma that this evidence presented to their support of SSRIs. (Liebert and Gavey, 2009)

This paper ... [explores] how ritualised practices in primary care clinics may embody and entrench power relations, being potentially functional for some constituencies while being dysfunctional for others. (Lewin and Green, 2009)

… we conducted an ethnographic study of technology transfer offices (TTOs) in Canada in 2007, to consider the place of health and health system imperatives in judgments of value in early-stage health innovation. (Miller, Sanders and Lehoux, 2009)

By contrast, it is more feasible to adopt a very specific, tightly defined set of research objectives at the start of a study and apply them consistently throughout if a lot is already known about the study topic from previous studies.

If you are doing a project where the research objectives evolve or change over the course of the project, aim to keep a record of the different objectives applying at each stage of the project so you can refer to these later in research reports (see Box 3.7).

Box 3.7 How objectives evolved during a project literature review

In a project involving a literature review looking at public knowledge about the risk factors for cardiovascular disease (CVD), with which one of the authors (DRT) worked on, the initial review objectives, as set out in the research proposal, were to focus on:

1. Specific risk factors for CVD
2. Public awareness of risk factors
3. Questionnaires and specific questions used to measure public awareness of risk factors

Part-way through the process of carrying out the literature review the review objectives were revised. The focus changed to:

1. Sample and survey methods used
2. Types of questions included in CVD surveys
3. Differences in knowledge among population groups
4. Interventions to improve knowledge about CVD and reduce the risk of CVD

The team made these revisions to the objectives as it became clearer what the important priorities for the review were, after reading the literature.

Before committing to projects likely to involve considerable research time and resources, aim to do some exploratory information gathering to get a feel for the practicality or feasibility of the project's research objectives. Sometimes an initial field exploration may lead to major changes in a project's research objectives (see Box 3.8).

Box 3.8 Changing research objectives

Even though a project's research objectives are finalised and written down, they can still be modified later, or even completely changed.

Leroy is a postgraduate student with an interest in youth car culture – boy-racers. He does not consider himself to be a boy-racer – he only rides a small scooter – but he is intrigued by how so many other young men his age seem to be obsessed with powerful cars, speed and big noisy stereos. After discussions with his supervisor, Leroy decides he would like to do an ethnographic study of some of the local boy-racer groups in his city. This would involve hanging out and getting to know some boy-racers and riding with them in their cars at night.

As a first step towards developing the project, Leroy does some initial reading on the topic. He finds there are already several studies of boy-racers published in the academic literature. However, none of these studies looked specifically at boy-racers in Leroy's city or region.

Leroy spends two months putting together a detailed project proposal for his supervisor outlining his research plans and how he would do the fieldwork. The proposal includes a list of Leroy's research objectives. These all relate to trying to better understand the motivations and experiences that encourage young men to become boy-racers.

After obtaining approval from his university's ethics committee to proceed with the study, Leroy starts out on his first week of fieldwork. Eventually, after several hours hanging about nervously in backstreet neighbourhoods after dark, he gets to talk to some boy-racers parked up at the kerb. After telling them about his study plans, the boy-racers eventually agree to take Leroy for a ride to give him a first-hand introduction to the boy-racing culture.

Within moments, Leroy is in the back seat of the car of his newly found research participants roaring along the inner city streets. In the hours that follow Leroy and his fellow passengers participate in burnouts, donuts, quarter mile drag races, drifting and numerous other competitive car stunts that leave Leroy's mind reeling and his heart thumping. On at least three occasions Leroy is sure he is about to die or be seriously injured in a car crash.

Meeting with his supervisor the next day, Leroy announces that he is intending to modify his research plans as he no longer regards his current research objectives to be feasible or safe. He indicates he plans to develop a new research project looking at the culture of multi-player Internet computer car racing games and why young men find these games so compelling.

In the later chapters, we will refer to research aims and objectives again. As will be seen, the work put into developing clear and feasible objectives will pay off in subsequent stages of your research project by providing a core organising framework that assists with preparing literature reviews and research proposals, managing your project's data collection and analysis, and writing research reports.

Exercises for developing research objectives

1. Develop a suitable research aim and three specific objectives for a research topic in which you have an interest.
2. Change the research objectives you developed above into research questions.
3. Using personal contacts or an Internet search, find some examples of completed research proposals on a topic in which you are interested. Note the style used to write the research aims and objectives.

4. Locate three recent journal articles covering a topic in which you are interested. Look at the introduction section of each article. How well do you think the authors describe their research aims or objectives? In what ways could their aims or objectives be written more clearly?

References and further reading

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