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# Using Case Studies in Research

by Jennifer Rowley

## Introduction

Case study as a research strategy often emerges as an obvious option for students and other new researchers who are seeking to undertake a modest scale research project based on their workplace or the comparison of a limited number of organisations. The most challenging aspect of the application of case study research in this context is to lift the investigation from a descriptive account of ‘what happens’ to a piece of research that can lay claim to being a worthwhile, if modest addition to knowledge. This article draws heavily on established textbooks on case study research and related areas, such as Yin, 1994, Hamel et al., 1993, Eaton, 1992, Gomm, 2000, Perry, 1998, and Saunders et al., 2000 but seeks to distil key aspects of case study research in such a way as to encourage new researchers to grapple with and apply some of the key principles of this research approach. The article explains when case study research can be used, research design, data collection, and data analysis, and finally offers suggestions for drawing on the evidence in writing up a report or dissertation.

## When to use Case Studies

Case studies as a research method or strategy have traditionally been viewed as lacking rigour and objectivity when compared with other social research methods. This is one of the major reasons for being extra careful to articulate research design, and implementation. On the other hand, despite this scepticism about case studies, they are widely used because they may offer insights that might not be achieved with other approaches. Case studies have often been viewed as a useful tool for the preliminary, exploratory stage of a research project, as a basis for the development of the ‘more structured’ tools that are necessary in surveys and experiments. For example, Eisenhardt (1989) says that case studies are:

*Particularly well suited to new research areas or research areas for which existing theory seems inadequate. This type of work is highly complementary to incremental theory building from normal science research. The former is useful in early stages of research on a topic or when a fresh perspective is needed, whilst the latter is useful in later stages of knowledge (pp.548-549).*

This is however a somewhat narrow conception of the application of case study research. As discussed below case studies are useful in providing answers to ‘How?’ and ‘Why?’ questions, and in this role can be used for exploratory, descriptive or explanatory research.

The first stage is to decide whether case studies can be useful for a specific kind of investigation. There are three factors that determine the best research methodology:

- The types of questions to be answered
- The extent of control over behavioural events, and
- The degree of focus on contemporary as opposed to historical events.

The issue of types of research question is the most significant in determining the most appropriate approach. Figure 1 (based on Yin, 1994, p.6) summarises the different kinds of research questions and methods that are most appropriate. Who, what and where questions can be investigated through documents, archival analysis, surveys and interviews. Case studies are one approach that supports deeper and more detailed investigation of the type that is normally necessary to answer how and why questions.

Case study research is also good for contemporary events when the relevant behaviour cannot be manipulated. Typically case study research uses a variety of evidence from different sources, such as documents, artefacts, interviews and observation, and this goes beyond the range of sources of evidence that might be available in historical study.

In summary then, case study research is useful when:

*A how or why question is being asked about a contemporary set of events over which the investigator has little or no control. (Yin, 1994, p.9)*

In contrast to surveys, typically the number of units studied in a case study is many less than in a survey, but the extent of detail available for each case should be greater. As compared with an experiment, the case study researcher has much less control over the variables, than if an experiment were used to investigate a situation. In a survey data may be collected from a number of organisations in order to generalise to all other organisations of the same type. In contrast in a comparative case study across a number of different organisations, the objective is to compare or replicate the organisations studied with each other in a systematic way, in the exploration of different research issues.

| <b>Figure 1: Choosing a Research Strategy</b> |                                      |
|---|--------------------------------------|
| <i>Strategy</i>                               | <i>Form of research question</i>     |
| Experiment                                    | How, why                             |
| Survey  | Who, what, where, how many, how much |
| Archival analysis                             | Who, what, where, how many, how much |
| History                                       | How, why                             |
| Case study                                    | How, why                             |

What is case study research? Yin (1994) p.13 defines a case study thus:

*A case study is an empirical inquiry that:*

- *Investigates a contemporary phenomena within its real life context, especially when*
- *The boundaries between phenomenon and context are not clearly evident.*

This statement emphasises that an important strength of case studies is the ability to undertake an investigation into a phenomenon in its context; it is not necessary to replicate the phenomenon in a laboratory or experimental setting in order to better understand the phenomena. Thus case studies are a valuable way of looking at the world around us. On the other hand, it is important not to confuse case studies with ethnographic and other strictly qualitative research paradigms. Case study research can be based on any mix of quantitative and qualitative approaches. Typically, it uses multiple data sources including two or more of: direct detailed observations, interviews, and documents. In addition, case studies can involve single or multiple cases as discussed in the next section on research design.

### **Research Design**

Research design often seems to be something of a mystery to new researchers, and the proneness of research philosophers to engage in sophisticated debates using terminology that is inaccessible to the novice does not help. On the basis that it is necessary to grasp the basics, and undertake some research before arriving at the position where some of these debates start to have some meaning, this section takes a very practical approach to research design. For those that need a health warning, this section takes a positivist and deductive approach to case study design. It urges the definition of questions and propositions in advance of data collection. This is in contrast to alternatives such as the grounded theory or inductive approach, in which questions, insights, propositions, and pictures emerge from the data collection. The authors are of the opinion that the positivist approach provides a firmer foundation for understanding and managing issues such as validity and reliability, and for structuring data collection and analysis, and is therefore a more straightforward process for the new researcher.

A research design is the logic that links the data to be collected and the conclusions to be drawn to the initial questions of a study; it ensures coherence. Another way of viewing a research design is to see it as an action plan for getting from the questions to conclusions. It should ensure that there is a clear view of what is to be achieved by the case study. This involves defining the basic components of the investigation, such as research questions and propositions, appreciating how validity and reliability can be established, and selecting a case study design.

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*Components of research design*

A research design has the following components:

- The study's questions
- The study's propositions
- The study's units of analysis
- The logic linking the data to the propositions
- The criteria for interpreting findings.

The previous section has already explored the nature of research questions. Starting with clearly formulated questions is useful for all research projects. Formulating research questions is never easy. Theory as embodied in the literature of a discipline is important in pointing towards appropriate research questions. Both practitioners and other researchers can generate questions that are of general interest, and that therefore might be fully explored in the context of the proposed case study. Sometimes with exploratory research the questions may have yet to be formulated; in this case the purpose of the research still needs to be defined.

Descriptive and explanatory studies need propositions. Research questions need to be translated into propositions. The researcher has to make a speculation, on the basis of the literature and any other earlier evidence as to what they expect the findings of the research to be. The data collection and analysis can then be structured in order to support or refute the research propositions.

The unit of analysis is the basis for the case. It may be an individual person (such as a business leader, or someone who has had an experience of interest), or an event, (such as a decision, a programme, an implementation process or organisational change), or an organisation or team or department within the organisation. It can sometimes be difficult to identify the boundaries of the unit of analysis. A key issue is that the case study should only ask questions about the unit of analysis, and any sub-units; sources of evidence and the evidence gathered are determined by the boundaries that define the unit of analysis.

Selecting the unit of analysis, or the case is crucial. Case selection must be determined by the research purpose, questions, propositions and theoretical context, but there will also be other constraints that impact on case selection. These include accessibility (whether the data needed can be collected from the case individual or organisation), resources (whether resources are available to support travel and other data collection and analysis costs), and time available (if time is limited, it may be easier to analyse a small business rather than a large business, or to identify a unit of analysis within a large organisation, rather than seek to study the organisation in its entirety).

Finally, it is necessary to decide what data is necessary in order to support or demolish the propositions, and to reflect on the criteria for interpreting the findings. These issues are explored in more detail later in the article.

*Generalisation, Validity and Reliability*

These three concepts establish the basis on which other researchers should regard a piece of research as knowledge that can be assimilated into the knowledge base of a field of study. It is therefore important to demonstrate that these issues have been fully considered.

Generalisation of the case study so that it contributes to theory is important. Generalisation can only be performed if the case study design has been appropriately informed by theory, and can therefore be seen to add to the established theory. The method of generalisation for case studies is not statistical generalisation, but analytical generalisation in which a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication can be claimed. In analytic generalisation, each case is viewed as an experiment, and not a case within an experiment. The greater the number of case studies that show replication the greater the rigour with which a theory has been established.

Four tests have been widely used to establish the quality of empirical social research:

1. **Construct validity** - establishing correct operational measures for the concepts being studied. This is concerned with exposing and reducing subjectivity, by linking data collection questions and measures to research questions and propositions.
2. **Internal validity** (for explanatory or causal studies only, and not for descriptive or exploratory studies) establishing a causal relationship whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.
3. **External validity:** establishing the domain to which a study's findings can be generalised. Generalisation is based on replication logic as discussed above.
4. **Reliability:** demonstrating that the operations of a study - such as the data collection produced can be repeated with the same results. This is achieved through thorough documentation of procedures and appropriate recording keeping.

Many of the approaches for ensuring validity and reliability are discussed further below in the sections on data collection and analysis.

| <b>Figure 2: Checking Case Study Design</b> |  |  |
|---|--|--|
| <i>Tests</i>                                | <i>Case Study tactic</i>                           | <i>Phase of re-search in which tactic occurs</i> |
| Construct validity                          | Use multiple sources of evidence                   | Data collection                                  |
|   | Establish chain of evidence                        |  |
|   | Have key informants review draft case study report | Data collection<br>Composition                   |
| Internal validity                           | Do pattern matching                                | Data analysis                                    |
|   | Do explanation building                            | Data analysis                                    |
|   | Do time series analysis                            | Data analysis                                    |
| External validity                           | Use replication logic in multiple case studies     | Research design                                  |
|   | Use case study protocol                            | Data collection                                  |
| Reliability                                 | Develop case study database                        | Data collection                                  |

### *Case Study Designs*

| <b>Figure 3: Case Study Designs</b>   |                            |                              |
|---------------------------------------|----------------------------|------------------------------|
|                                       | <i>Single Case Designs</i> | <i>Multiple Case Designs</i> |
| Holistic (single unit of analysis)    | Type 1                     | Type 3                       |
| Embedded (multiple units of analysis) | Type 2                     | Type 4                       |

As summarised in Figure 3 case study designs can be categorised along two dimensions, reflecting whether the number of case studies contributing to the design, and the number of units in each case study respectively.

The differentiation between single case and multiple case designs needs to be clearly made. A single case design is akin to a single experiment. Single case studies are appropriate when the case is special (in relation to established theory) for some reason. This might arise when the case provides a critical test to a well-established theory, or where the case is extreme, unique, or has something special to reveal. Single case studies are also used as a preliminary or pilot in multiple case studies.

Multiple case designs are preferred. On the basis of the replication logic discussed above, multiple cases can be regarded as equivalent to multiple experiments. The more cases that can be marshalled to establish or refute a theory, the more robust are the research outcomes. A frequent question is how many cases should be included in a multiple case study. There is no simple answer to this question. Cases need to be carefully selected so that they either produce similar results (literal replication), or produce contrasting results but for predictable reasons (theoretical replication). Typically within say six to

ten cases, a few cases might be used to achieve literal replication, whereas others might be designed to peruse other patterns of theoretical replications. If all of the cases turn out as predicted then there is strong evidence for the initial set of propositions. If, however, the cases reveal a variety of different outcomes, it may be necessary to revisit the propositions, and consider conducting further research. The number of cases depends on the nature of the propositions to be substantiated.

Case studies can also be divided into holistic or embedded studies. Holistic case studies examine the case as one unit. They might, for example, focus on broad issues of organisational culture or strategy. This approach ensures a helicopter view of the case, but can be superficial, and may miss changes in the unit of analysis that could impact on the appropriateness of the original research design. Embedded designs identify a number of sub units (such as meetings, roles or locations) each of which is explored individually; results from these units are drawn together to yield an overall picture. The biggest challenge with embedded designs lies in achieving a holistic perspective from the analysis of the sub-units.

### **Data Collection**

Data collection, and in general the execution of a good case study, depend crucially upon the competence of the researcher. Unlike, with say, a questionnaire, the evidence to be gathered is defined as it is collected, and the researcher is an active agent in the process. This means that the researcher undertaking data collection needs to be able to ask good questions, to listen and to interpret the answers. This involves having a sound grasp of the questions and propositions of the case study, and being able to approach the study in an unbiased, and flexible manner.

Data collection should be guided by a case study protocol. This protocol needs to include the following sections:

1. An overview of the case study project.
2. Field procedures, such as use of different sources of information, and access arrangements to these sources.
3. Case study questions, or the questions that the case study researcher needs to keep in mind when collecting data. These questions are posed to the researcher, and not to any specific respondents, although they may be used to guide the formulation of questions to interviewees, and members of focus groups. In complex cases studies it is important to differentiate between the questions asked of specific interviewees and used to interrogate documents, questions asked of the individual case, and questions to be asked across multiple cases.

Larger case studies, with multiple cases and embedded designs with several sub units in each case study are likely to need a team of researchers. When more than one researcher is engaged in gathering evidence, the case study protocol is a central communication document for the team. However, it is not sufficient to draft such a document, and leave it for researchers to read. The success of the project depends upon the quality of the researcher's engagement with the problem and the agreed process. Training and participation in research design are important in ensuring that a team has an appropriate level of familiarity with the case study investigation.

### *Gathering evidence*

Typically case studies draw on multiple sources of evidence. These include documents, archival records, interviews, direct observation, participant observation, and physical artefacts. Each of these different sources require different approaches to their interrogation, and are likely to yield different kinds of insights. Each source has its strengths and its weaknesses, and the richness of the case study evidence base derives largely from this multi-faceted perspective yielded by using different sources of evidence.

Whichever sources of evidence are used, there are three key principles of data collection that need to be observed:

1. **Triangulation** - one of the great strengths of case studies as compared with other methods is that evidence can be collected from multiple sources. Triangulation uses evidence from different sources to corroborate the same fact or finding.
2. **Case Study Database** - A case study database of the evidence gathered needs to be collected. Whilst a report or dissertation may be the primary distillation of the case study, a further outcome which strengthens the repeatability of the research, and increases the transparency of the findings is a well organised collection of the evidence base. This base may include case notes made by the investigators, case study documents that are collected during a case study, interview notes or transcripts, and analysis of the evidence. When preparing a dissertation it will be useful to agree with a supervisor whether some elements of this evidence base should be presented as appendices to the dissertation.
3. **Chain of Evidence** - The researcher needs to maintain a chain of evidence. The report should make clear the sections on the case study databases that it draws upon, by appropriate citation of documents and interviews. Also, the actual evidence needs to be accessible in the databases. Within the database, it should be clear that the data collection followed the protocol, and the link between the protocol questions and the propositions should be transparent.



### **Analysis of Case Study Evidence**

Analysing case study evidence is not easy. Typically a case study database will include a multitude of different evidence from different sources. Data analysis of this rich resource is based on examining, categorising and tabulating evidence to assess whether the evidence supports or otherwise the initial propositions of the study. The preferred strategy for analysis is to use the propositions that encapsulate the objectives of the study, and which have shaped the data collection. The researcher trawls through the evidence seeking corroboration or otherwise of the initial propositions, and then records relevant evidence and makes a judgement on whether the positions have been substantiated. This is where you discover whether the propositions were well formulated in the first place!!

In exploratory case studies that typically do not start with propositions, an alternative approach needs to be adopted. Here an alternative analytic strategy is to develop a descriptive framework for organising the case study. Thus a framework of sections reflecting the themes in the case study are developed and evidence is gathered within relevant themes, and analysed and compared in these categories, in order to achieve a description of the case study that can be corroborated from multiple sources of evidence.

In general, there are no cookbook procedures that have been agreed for the analysis of case study results, but good case study analysis adheres to the following principles:

1. The analysis makes use of all of the relevant evidence
2. The analysis considers all of the major rival interpretations, and explores each of them in turn
3. The analysis should address the most significant aspect of the case study
4. The analysis should draw on the researchers prior expert knowledge in the area of the case study, but in an unbiased and objective manner.

### **Writing the Case Study Report**

Writing the case study report can be a daunting task, because at this point the researcher needs to discriminate between what is to be included and the wealth of evidence that will not appear in the report, but stays in the case study database. Effective analysis of the results will assist in providing a structure. The task of writing a report or dissertation will appear less overwhelming if the researcher has observed the advice to all researchers which is to write up as the research proceeds. Drafts of literature review and methodology sections can be written in parallel with data collection. A key factor in determining the coverage and presentation of the case study report is the intended audience. Case studies have a range of potential audiences, includ-

ing academic colleagues, policymakers, practitioner professionals, the general public, research supervisors and examiners, and funders of research. These different audiences have different needs. For example, for non-specialist audiences, the story that the case study tells may be most engaging, and they may seek in the case study a basis for action. For a dissertation assessor, mastery of methodology, and an understanding of the way that the research makes a contribution to existing knowledge will be important.

### Alternative Perspectives on Case Studies

The guidance given in this article derives largely from the approach suggested by Yin, 1994. This approach is primarily positivistic in perspective, and can be characterised by the following positions:

1. The analytic approach to generalisation.
2. Theory should inform propositions, and propositions inform data collection and analysis.
3. The researcher acts as commentator, in representing and interpreting the case in a way that relates to previous theory.

There is an ongoing debate around each of these positions, which reflects the different perspectives taken by the positivist and phenomenological schools of research philosophy and strategy (Gomm, 2000). In order to encourage continuing reflection on these matters it is useful to summarise some of the questions that can be posed:

1. **Generalisation** - Is generalisation necessary? The need for generalisation derives from a positivist approach in which generalisation on the basis of samples is the norm. Can case studies just be accepted as insights as they stand, with readers making their own interpretation, and taking the ideas from the case study into their own experience (sometimes called Naturalistic generalisation). Alternatively, can case studies be used as the basis for the formulation of working hypotheses? If attempts to generalise are necessary, what does generalisation in this context mean?
2. **Role of theory** - Is it necessary to use theory to inform propositions, or can case studies be used as a basis for grounded theory development, in which the theory emerges through data collection and analysis?
3. **Authenticity and authority** - Whose voice is recorded in the case study report? Some researchers use case study as a method of 'allowing the voices of participants to be heard'. This position is based on a rejection of any authority on the part of the study researcher. On the other hand, some would argue that the very act of conducting research undermines the authenticity of the voices to

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which researchers seek to listen, and that the very act of interacting with the participants changes the case study situation.

The three points above set the agenda for further development of understanding and sophistication in approaches to case study research. The readings listed below offer numerous insights into the debate around case study research and the kind of knowledge that it claims to generate.

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## Readings

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