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## *Case Studies*

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## 1. Introduction

Case study refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves. A form of qualitative descriptive research, the case study looks at an individual or small participant pool, drawing conclusions only about that participant or group and only in that specific context.

Yin presented Giddens' view that considered case methodology "microscopic" because it "lacked a sufficient number" of cases. Hamel et al. (1993) argued that the relative size of the sample whether 2, 10, or 100 cases are used, does not transform a multiple case into a macroscopic study. The goal of the study should establish the parameters, and then should be applied to all research. In this way, even a single case could be considered acceptable, provided it met the established objective.

There are several examples of the use of case methodology in the literature. Yin (1993) listed several examples along with the appropriate research design in each case. There were suggestions for a general approach to designing case studies, and also recommendations for *exploratory*, *explanatory*, and *descriptive* case studies.

In *exploratory* case studies, fieldwork, and data collection may be undertaken prior to definition of the research questions and hypotheses. This type of study has been considered as a prelude to some social research. However, the framework of the study must be created ahead of time.

*Explanatory* cases are suitable for doing causal studies. In very complex and multivariate cases, the analysis can make use of pattern-matching techniques. Yin and Moore (1988) conducted a study to examine the reason why some research findings get into practical use. They used a funded research project as the unit of analysis, where the topic was constant but the project varied.

*Descriptive* cases require that the investigator begin with a descriptive theory, or face the possibility that problems will occur during the project. Descriptive theory must cover the depth and scope of the case under study. The selection of cases and the unit of analysis are developed in the same manner as the other types of case studies.

Case studies have been increasingly used in education. Harvard University has been a leader in this area, and cases developed by the faculty have been published for use by other institutions.

## 2. Designing Case Studies

Yin (1994) identified five components of research design that are important for case studies:

- A study's questions
- Its propositions, if any
- Its unit(s) of analysis
- The logic linking the data to the propositions
- The criteria for interpreting the findings

The study's questions are most likely to be "how" and "why" questions and their definition is the first task of the researcher. The study's propositions sometimes derive from the "how" and "why" questions, and are helpful in focusing the study's goals. Not all studies need to have propositions. An exploratory study, rather than having propositions, would have a stated purpose or criteria on which the success will be judged. The unit of analysis defines what the case is. This could be groups, organizations or countries, but it is the primary unit of analysis.

Construct validity is especially problematic in case study research. It has been a source of criticism because of potential investigator subjectivity. Yin (1994) proposed three remedies to counteract this: using multiple sources of evidence, establishing a chain of evidence, and having a draft case study report reviewed by key informants. Internal validity is a concern only in causal (explanatory) cases. This is usually a problem of "inferences" in case studies, and can be dealt with using pattern-matching, which has been described above. External validity deals with knowing whether the results are generalizable beyond the immediate case. Some of the criticism against case studies in this area relate to single-case studies. Reliability is achieved in many ways in a case study. One of the most important methods is the development of the case study protocol.

Case studies can be either single or multiple-case designs, where a multiple design must follow a replication rather than sampling logic. When no other cases are available for replication, the researcher is limited to single-case designs. Multiple cases strengthen the results by replicating the pattern-matching, thus increasing confidence in the robustness of the theory.

Single cases are used to confirm or challenge a theory, or to represent a unique or extreme case. Single-case designs require careful investigation to avoid misrepresentation and to maximize the investigator's access to the evidence. Multiple-case studies follow a replication logic. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts.

A case study protocol contains more than the survey instrument, it should also contain procedures and general rules that should be followed in using the instrument. Yin (1994) presented the protocol as a major component in asserting the reliability of the case study research. A typical protocol should have the following sections:

- An overview of the case study project (objectives, issues, topics being investigated)
- Field procedures (credentials and access to sites, sources of information)
- Case study questions (specific questions that the investigator must keep in mind during data collection)
- A guide for case study report (outline, format for the narrative)

The overview should communicate to the reader the general topic of inquiry and the purpose of the case study. The field procedures mostly involve data collection issues and must be properly designed. The investigator does not control the data collection environment (Yin, 1994) as in other research strategies; hence the procedures become all the more important. During interviews, which by nature are open ended; the subject's schedule must dictate the activity (Stake, 1995).

Case study questions are posed to the investigator, and must serve to remind that person of the data to be collected and its possible sources. The guide for the case study report is often neglected, but case studies do not have the uniform outline. It is essential to plan this report as the case develops, to avoid problems at the end.

Stake (1995) and Yin (1994) identified at least six sources of evidence in case studies:

- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artifacts

Documents could be letters, agendas, administrative documents, newspaper articles, or any document that is related to the investigation. The documents serve to strengthen the evidence from other sources while they are also useful for making inferences about events. Documents can lead to false leads, in the hands of inexperienced researchers, which has been a criticism of case study research.

Interviews are one of the most important sources of case study information. There are several forms of interviews that are possible: Open-ended, Focused, and Structured or survey. In an open-ended interview, key respondents are asked to comment about certain events. They may propose solutions or provide insight into events. The researcher must avoid becoming dependent on a single informant, and seek the same data from other sources to verify its authenticity.

Direct observation occurs when a field visit is conducted during the case study. It could be as simple as casual data collection activities, or formal protocols to measure and record behaviors. This technique is useful for providing additional information about the topic being studied. The reliability is enhanced when more than one observer is involved in the task.

Participant-observation makes the researcher into an active participant in the events being studied. This often occurs in studies of neighborhoods or groups. The technique provides some unusual opportunities for collecting data, but could face some major problems as well. The researcher could well alter the course of events as part of the group, which may not be helpful to the study.

Physical artifacts can be tools, instruments, or some other physical evidence that may be collected during the study as part of a field visit. The perspective of the researcher can be broadened as a result of the discovery.

### **3. Analyzing Case Studies**

This aspect of the case study methodology is the least developed and hence the most difficult. As a result, some researchers have suggested that if the study were made conducive to statistical analysis, the process would be easier and more acceptable. This quantitative approach would be appealing to some of the critics of the case study methodology. However not all case studies lend themselves to this type of analysis.

There must first be an analytic strategy that will lead to conclusions. Yin (1994) presented two strategies for general use: One is to rely on theoretical propositions of the study, and then to analyze the evidence based on those propositions. The other technique is to develop a case description, which would be a framework for organizing the case study.

Pattern-matching is another major mode of analysis. This type of logic compares an empirical pattern with a predicted one. Internal validity is enhanced when the patterns coincide. If the case study is an explanatory one, the patterns may be related to the dependent or independent variables. If it is a descriptive study, the predicted pattern must be defined prior to data collection. Yin (1994) recommended using rival explanations as pattern-matching when there are independent variables involved. This requires the development of rival theoretical propositions, but the overall concern remains the degree to which a pattern matches the predicted one.

Yin (1994) encouraged researchers to make every effort to produce an analysis of the highest quality. In order to accomplish this, he presented four principles that should attract the researcher's attention:

- Show that the analysis relied on all the relevant evidence
- Include all major rival interpretations in the analysis
- Address the most significant aspect of the case study
- Use the researcher's prior, expert knowledge to further the analysis

Stake (1995) recommended categorical aggregation as another means of analysis and also suggested developing protocols for this phase of the case study to enhance the quality of

the research. He also presented ideas on pattern-matching along the lines that Yin (1994) presented. Stake (1995) favored coding the data and identifying the issues more clearly at the analysis stage.

Case study is a valuable method of research, with distinctive characteristics that make it ideal for many types of investigations. It can also be used in combination with other methods. Its use and reliability should make it a more widely used methodology, once its features are better understood by potential researchers.

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