The Case Study as a Research Method

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Introduction

Case study research excels at bringing us to an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. Case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationships. Researchers have used the case study research method for many years across a variety of disciplines. Social scientists, in particular, have made wide use of this qualitative research method to examine contemporary real-life situations and provide the basis for the application of ideas and extension of methods. Researcher Robert K. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1984, p. 23).

Critics of the case study method believe that the study of a small number of cases can offer no grounds for establishing reliability or generality of findings. Others feel that the intense exposure to study of the case biases the findings. Some dismiss case study research as useful only as an exploratory tool. Yet researchers continue to use the case study research method with success in carefully planned and crafted studies of real-life situations, issues, and problems. Reports on case studies from many disciplines are widely available in the literature.

This paper explains how to use the case study method and then applies the method to an example case study project designed to examine how one set of users, non-profit organizations, make use of an electronic community network. The study examines the issue of whether or not the electronic community network is beneficial in some way to non-profit organizations and what those benefits might be.

Many well-known case study researchers such as Robert E. Stake, Helen Simons, and Robert K. Yin have written about case study research and suggested techniques for organizing and conducting the research successfully. This introduction to case study research draws upon their work and proposes six steps that should be used:

- Determine and define the research questions
- Select the cases and determine data gathering and analysis techniques
- Prepare to collect the data
- Collect data in the field
- Evaluate and analyze the data
- Prepare the report

Step 1. Determine and Define the Research Questions

The first step in case study research is to establish a firm research focus to which the researcher can refer over the course of study of a complex phenomenon or object. The researcher establishes the focus of the study by forming questions about the situation or problem to be studied and determining a purpose for the study. The research object in a case study is often a program, an entity, a person, or a group of people. Each object is likely to be intricately connected to political, social, historical, and personal issues, providing wide ranging possibilities for questions and adding complexity to the case study. The researcher investigates the object of the case study in depth using a variety of data gathering methods to produce evidence that leads to understanding of the case and answers the research questions.

Case study research generally answers one or more questions which begin with "how" or "why." The questions are targeted to a limited number of events or conditions and their inter-relationships. To assist in targeting and formulating the questions, researchers conduct a literature review. This review establishes what research has been previously conducted and leads to refined, insightful questions about the problem. Careful definition of the questions at the start pinpoints where to look for evidence and helps determine the methods of analysis to be used in the study. The literature review, definition of the purpose of the case study, and early determination of the potential audience for the final report guide how the study will be designed, conducted, and publicly reported.

Step 2. Select the Cases and Determine Data Gathering and Analysis Techniques

During the design phase of case study research, the researcher determines what approaches to use in selecting single or multiple real-life cases to examine in depth and which instruments and data gathering approaches to use. When using multiple cases, each case is treated as a single case. Each case's conclusions can then be used as information contributing to the whole study, but each case remains a single case. Exemplary case studies carefully select cases and carefully examine the choices available from among many research tools available in order to increase the validity of the study. Careful discrimination at the point of selection also helps erect boundaries around the case.

The researcher must determine whether to study cases which are unique in some way or cases which are considered typical and may also select cases to represent a variety of geographic regions, a variety of size parameters, or other parameters. A useful step in the selection process is to repeatedly refer back to the purpose of the study in order to focus attention on where to look for cases and evidence that will satisfy the purpose of the study and answer the research questions posed. Selecting multiple or single cases is a key element, but a case study can include more than one unit of embedded analysis. For example, a case study may involve study of a single industry and a firm participating in that industry. This type of case study involves two levels of analysis and increases the complexity and amount of data to be gathered and analyzed.

A key strength of the case study method involves using multiple sources and techniques in the data gathering process. The researcher determines in advance what evidence to gather and what analysis techniques to use with the data to answer the research questions. Data gathered is normally largely qualitative, but it may also be quantitative.

Tools to collect data can include surveys, interviews, documentation review, observation, and even the collection of physical artifacts.

The researcher must use the designated data gathering tools systematically and properly in collecting the evidence. Throughout the design phase, researchers must ensure that the study is well constructed to ensure construct validity, internal validity, external validity, and reliability. Construct validity requires the researcher to use the correct measures for the concepts being studied. Internal validity (especially important with explanatory or causal studies) demonstrates that certain conditions lead to other conditions and requires the use of multiple pieces of evidence from multiple sources to uncover convergent lines of inquiry. The researcher strives to establish a chain of evidence forward and backward. External validity reflects whether or not findings are generalizable beyond the immediate case or cases; the more variations in places, people, and procedures a case study can withstand and still yield the same findings, the more external validity. Techniques such as cross-case examination and within-case examination along with literature review helps ensure external validity. Reliability refers to the stability, accuracy, and precision of measurement. Exemplary case study design ensures that the procedures used are well documented and can be repeated with the same results over and over again.

Step 3. Prepare to Collect the Data

Because case study research generates a large amount of data from multiple sources, systematic organization of the data is important to prevent the researcher from becoming overwhelmed by the amount of data and to prevent the researcher from losing sight of the original research purpose and questions. Advance preparation assists in handling large amounts of data in a documented and systematic fashion. Researchers prepare databases to assist with categorizing, sorting, storing, and retrieving data for analysis.

Exemplary case studies prepare good training programs for investigators, establish clear protocols and procedures in advance of investigator field work, and conduct a pilot study in advance of moving into the field in order to remove obvious barriers and problems. The investigator training program covers the basic concepts of the study, terminology, processes, and methods, and teaches investigators how to properly apply the techniques being used in the study. The program also trains investigators to understand how the gathering of data using multiple techniques strengthens the study by providing opportunities for triangulation during the analysis phase of the study. The program covers protocols for case study research, including time deadlines, formats for narrative reporting and field notes, guidelines for collection of documents, and guidelines for field procedures to be used. Investigators need to be good listeners who can hear exactly the words being used by those interviewed. Qualifications for investigators also include being able to ask good questions and interpret answers. Good investigators review documents looking for facts, but also read between the lines and pursue collaborative evidence elsewhere when that seems appropriate. Investigators need to be flexible in real-life situations and not feel threatened by unexpected change, missed appointments, or lack of office space. Investigators need to understand the purpose of the study and grasp the issues and must be open to contrary findings. Investigators must also be aware that they are going into the world of real human beings who may be threatened or unsure of what the case study will bring.

After investigators are trained, the final advance preparation step is to select a pilot site and conduct a pilot test using each data gathering method so that problematic areas can be uncovered and corrected. Researchers need to anticipate key problems and events, identify key people, prepare letters of introduction, establish rules for confidentiality, and actively seek opportunities to revisit and revise the research design in order to address and add to the original set of research questions.

4. Collect Data in the Field

The researcher must collect and store multiple sources of evidence comprehensively and systematically, in formats that can be referenced and sorted so that converging lines of inquiry and patterns can be uncovered. Researchers carefully observe the object of the case study and identify causal factors associated with the observed phenomenon. Renegotiation of arrangements with the objects of the study or addition of questions to interviews may be necessary as the study progresses. Case study research is flexible, but when changes are made, they are documented systematically.

Exemplary case studies use field notes and databases to categorize and reference data so that it is readily available for subsequent reinterpretation. Field notes record feelings and intuitive hunches, pose questions, and document the work in progress. They record testimonies, stories, and illustrations which can be used in later reports. They may warn of impending bias because of the detailed exposure of the client to special attention, or give an early signal that a pattern is emerging. They assist in determining whether or not the inquiry needs to be reformulated or redefined based on what is being observed. Field notes should be kept separate from the data being collected and stored for analysis.

Maintaining the relationship between the issue and the evidence is mandatory. The researcher may enter some data into a database and physically store other data, but the researcher documents, classifies, and cross-references all evidence so that it can be efficiently recalled for sorting and examination over the course of the study.

Step 5. Evaluate and Analyze the Data

The researcher examines raw data using many interpretations in order to find linkages between the research object and the outcomes with reference to the original research questions. Throughout the evaluation and analysis process, the researcher remains open to new opportunities and insights. The case study method, with its use of multiple data collection methods and analysis techniques, provides researchers with opportunities to triangulate data in order to strengthen the research findings and conclusions.

The tactics used in analysis force researchers to move beyond initial impressions to improve the likelihood of accurate and reliable findings. Exemplary case studies will deliberately sort the data in many different ways to expose or create new insights and will deliberately look for conflicting data to disconfirm the analysis. Researchers categorize, tabulate, and recombine data to address the initial propositions or purpose of the study, and conduct cross-checks of facts and discrepancies in accounts. Focused, short, repeat interviews may be necessary to gather additional data to verify key observations or check a fact.

Specific techniques include placing information into arrays, creating matrices of categories, creating flow charts or other displays, and tabulating frequency of events. Researchers use the quantitative data that has been collected to corroborate and support the qualitative data which is most useful for understanding the rationale or theory underlying relationships. Another technique is to use multiple investigators to gain the advantage provided when a variety of perspectives and insights examine the data and the patterns. When the multiple observations converge, confidence in the findings increases. Conflicting perceptions, on the other hand, cause the researchers to pry more deeply.

Another technique, the cross-case search for patterns, keeps investigators from reaching premature conclusions by requiring that investigators look at the data in many different ways. Cross-case analysis divides the data by type across all cases investigated. One researcher then examines the data of that type thoroughly. When a pattern from one data type is corroborated by the evidence from another, the finding is stronger. When evidence conflicts, deeper probing of the differences is necessary to identify the cause or source of conflict. In all cases, the researcher treats the evidence fairly to produce analytic conclusions answering the original "how" and "why" research questions.

Step 6. Prepare the report

Exemplary case studies report the data in a way that transforms a complex issue into one that can be understood, allowing the reader to question and examine the study and reach an understanding independent of the researcher. The goal of the written report is to portray a complex problem in a way that conveys a vicarious experience to the reader. Case studies present data in very publicly accessible ways and may lead the reader to apply the experience in his or her own real-life situation. Researchers pay particular attention to displaying sufficient evidence to gain the reader's confidence that all avenues have been explored, clearly communicating the boundaries of the case, and giving special attention to conflicting propositions.

Techniques for composing the report can include handling each case as a separate chapter or treating the case as a chronological recounting. Some researchers report the case study as a story. During the report preparation process, researchers critically examine the document looking for ways the report is incomplete. The researcher uses representative audience groups to review and comment on the draft document. Based on the comments, the researcher rewrites and makes revisions. Some case study researchers suggest that the document review audience include a journalist and some suggest that the documents should be reviewed by the participants in the study.

Applying the Case Study Method to an Electronic Community Network

By way of example, we apply these six steps to an example study of multiple participants in an electronic community network. All participants are non-profit organizations which have chosen an electronic community network on the World Wide Web as a method of delivering information to the public. The case study method is applicable to this set of users because it can be used to examine the issue of whether or not the electronic community network is beneficial in some way to the organization and what those benefits might be.

Step 1. Determine and Define the Research Questions

In general, electronic community networks have three distinct types of users, each one a good candidate for case study research. The three groups of users include people around the world who use the electronic community network, the non-profit organizations using the electronic community network to provide information to potential users of their services, and the "community" that forms as the result of interacting with other participants on the electronic community network.

In this case, the researcher is primarily interested in determining whether or not the electronic community network is beneficial in some way to non-profit organization participants. The researcher begins with a review of the literature to determine what prior studies have determined about this issue and uses the literature to define the following questions for the study of the non-profit organizations providing information to the electronic community network:

Why do non-profit organization participants use the network?

How do non-profit organization participants determine what to place on the electronic community network?

Do the non-profit organization participants believe the community network serves a useful purpose in furthering their mission? How?

Step 2. Select the Cases and Determine Data Gathering and Analysis Techniques

Many communities have constructed electronic community networks on the World Wide Web. At the outset of the design phase, the researcher determines that only one of these networks will be studied and further sets the study boundaries to include only some of the non-profit organizations represented on that one network. The researcher contacts the Board of Directors of the community network, who are open to the idea of the case study. The researcher also gathers computer generated log data from the network and, using this data, determines that an in-depth study of representative organizations from four categories -- health care, environmental, education, and religious -- is feasible. The investigator applies additional selection criteria so that an urban-based and a rural-based non-profit are represented in the study in order to examine whether urban non-profits perceive more benefits from community networks than rural organizations.

The researcher considers multiple sources of data for this study and selects document examination, the gathering and study of organizational documents such as administrative reports, agendas, letters, minutes, and news clippings for each of the organizations. In this case, the investigator decides to also conduct open-ended interviews with key members of each organization using a check-list to guide interviewers during the interview process so that uniformity and consistency can be assured in the data, which could include facts, opinions, and unexpected insights. In this case study, the researcher cannot employ direct observation as a tool because some of the organizations involved have no office and meet infrequently to conduct business directly related to the electronic community network. The researcher instead decides to survey all Board members of the selected organizations using a questionnaire as a third

data gathering tool. Within-case and cross-case analysis of data are selected as analysis techniques.

Step 3. Prepare to Collect the Data

The researcher prepares to collect data by first contacting each organization to be studied to gain their cooperation, explain the purpose of the study, and assemble key contact information. Since data to be collected and examined includes organizational documents, the researcher states his intent to request copies of these documents, and plans for storage, classification, and retrieval of these items, as well as the interview and survey data. The researcher develops a formal investigator training program to include seminar topics on non-profit organizations and their structures in each of the four categories selected for this study. The training program also includes practice sessions in conducting open-ended interviews and documenting sources, suggested field notes formats, and a detailed explanation of the purpose of the case study. The researcher selects a fifth case as a pilot case, and the investigators apply the data gathering tools to the pilot case to determine whether the planned timeline is feasible and whether or not the interview and survey questions are appropriate and effective. Based on the results of the pilot, the researcher makes adjustments and assigns investigators particular cases which become their area of expertise in the evaluation and analysis of the data.

Step 4. Collect Data in the Field

Investigators first arrange to visit with the Board of Directors of each non-profit organization as a group and ask for copies of the organization's mission, news clippings, brochures, and any other written material describing the organization and its purpose. The investigator reviews the purpose of the study with the entire Board, schedules individual interview times with as many Board members as can cooperate, confirms key contact data, and requests that all Board members respond to the written survey which will be mailed later.

Investigators take written notes during the interview and record field notes after the interview is completed. The interviews, although open-ended, are structured around the research questions defined at the start of the case study.

Research Question: Why do non-profit organization participants use the network?

Interview Questions: How did the organization make the decision to place data on the World Wide Web community network? What need was the organization hoping to fulfill?

Research Question: How do non-profit organization participants determine what to place on the electronic community network?

Interview Questions: What process was used to select the information that would be used on the network? How is the information kept up to date?

Research Question: Do the non-profit organization participants believe the community network serves a useful purpose in furthering their mission? How?

Interview Questions: How does the organization know if the electronic community network is beneficial to the organization? How does the electronic community network further the mission of the organization? What systematic tracking mechanisms exist to determine how many or what types of users are accessing the organization information?

The investigator's field notes record impressions and questions that might assist with the interpretation of the interview data. The investigator makes note of stories told during open-ended interviews and flags them for potential use in the final report. Data is entered into the database.

The researcher mails written surveys to all Board members with a requested return date and a stamped return envelope. Once the surveys are returned, the researcher codes and enters the data into the database so that it can be used independently as well as integrated when the case study progresses to the point of cross-case examination of data for all four cases.

Step 5. Evaluate and Analyze the Data

Within-case analysis is the first analysis technique used with each non-profit organization under study. The assigned investigator studies each organization's written documentation and survey response data as a separate case to identify unique patterns within the data for that single organization. Individual investigators prepare detailed case study write-ups for each organization, categorizing interview questions and answers and examining the data for within-group similarities and differences.

Cross-case analysis follows. Investigators examine pairs of cases, categorizing the similarities and differences in each pair. Investigators then examine similar pairs for differences, and dissimilar pairs for similarities. As patterns begin to emerge, certain evidence may stand out as being in conflict with the patterns. In those cases, the investigator conducts follow-up focused interviews to confirm or correct the initial data in order to tie the evidence to the findings and to state relationships in answer to the research questions.

Step 6 Prepare the Report

The outline of the report includes thanking all of the participants, stating the problem, listing the research questions, describing the methods used to conduct the research and any potential flaws in the method used, explaining the data gathering and analysis techniques used, and concluding with the answers to the questions and suggestions for further research. Key features of the report include a retelling of specific stories related to the successes or disappointments experienced by the organizations that were conveyed during data collection, and answers or comments illuminating issues directly related to the research questions. The researcher develops each issue using quotations or other details from the data collected, and points out the triangulation of data where applicable. The report also includes confirming and conflicting findings from literature reviews. The report conclusion makes assertions and suggestions for further research activity, so that another researcher may apply these techniques to another electronic community network and its participants to determine whether similar findings are identifiable in other communities. Final report distribution includes all participants.

Applicability to Library and Information Science

Case study research, with its applicability across many disciplines, is an appropriate methodology to use in library studies. In Library and Information Science, case study research has been used to study reasons why library school programs close (Paris, 1988), to examine reference service practices in university library settings (Lawson, 1971), and to examine how questions are negotiated between customers and librarians (Taylor, 1967). Much of the research is focused exclusively on the librarian as the object or the customer as the object. Researchers could use the case study method to further study the role of the librarian in implementing specific models of service. For example, case study research could examine how information-seeking behavior in public libraries compares with information-seeking behavior in places other than libraries, to conduct in-depth studies of non-library community based information services to compare with library based community information services, and to study community networks based in libraries.

Conclusion

Case studies are complex because they generally involve multiple sources of data, may include multiple cases within a study, and produce large amounts of data for analysis. Researchers from many disciplines use the case study method to build upon theory, to produce new theory, to dispute or challenge theory, to explain a situation, to provide a basis to apply solutions to situations, to explore, or to describe an object or phenomenon. The advantages of the case study method are its applicability to real-life, contemporary, human situations and its public accessibility through written reports. Case study results relate directly to the common reader's everyday experience and facilitate an understanding of complex real-life situations.

Bibliography

Busha, C. H., & Harter, S. P. (1980). *Research methods in librarianship, techniques and interpretation.* New York: Academic Press.

Chang, H. C. (1974). *Library goals as responses to structural milieu requirements: A comparative case study.* Unpublished doctoral dissertation, University of Massachusetts, Amherst.

DuMont, R. R. (1975). *The large urban public library as an agency of social reform, 1890-1915.* Unpublished doctoral dissertation, University of Pittsburgh, Pennsylvania.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review, 14*(4), 352-550.

Emory, C. W., & Cooper, D. R. (1991). *Business research methods.* (4th ed.). Boston, MA: Irvin.

Goldhor, H. (1972). *An introduction to scientific research in librarianship.* Urbana, IL: University of Illinois.

Hamel, J. (with Dufour, S., & Fortin, D.). (1993). *Case study methods.* Newbury Park, CA: Sage.

Harris, S., & Sutton, R. (1986). Functions of parting ceremonies in dying organizations. *Academy of Management Journal, 19,* 5-30.

Lawson, V. (1971). *Reference service in university libraries, two case studies.* Unpublished doctoral dissertation, Columbia University, New York.

McAdams, D. C. (1979). *Powerful actors in public land use decision making processes: A case study in Austin, Texas.* Unpublished doctoral dissertation, University of Texas, Austin.

McClure, C. R., & Hernon, P. (Eds.). (1991). *Library and information science research: perspectives and strategies for improvement.* Norwood, NJ: Ablex.

Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods.* Beverly Hills, CA: Sage.

Miller, F. (1986). Use, appraisal, and research: A case study of social history. *The American Archivist: 49*(4), 371-392.

Paris, M. (1988). *Library school closings: Four case studies.* Metuchen, NJ: Scarecrow Press.

Patton, M. Q. (1980). *Qualitative evaluation methods.* Beverly Hills, CA: Sage.

Powell, R. R. (1985). *Basic research methods for librarians.* Norwood, NJ: Ablex.

Schindler, D. (1996). *Urban youth and the frail elderly: Reciprocal giving and receiving.* New York: Garland.

Simons, H. (1980). *Towards a science of the singular: Essays about case study in educational research and evaluation.* Norwich, UK: University of East Anglia, Centre for Applied Research in Education.

Stake, R. E. (1995). *The art of case study research.* Thousand Oaks, CA: Sage.

Swisher, R., & McClure, C. R. (1984). *Research for decision making, methods for librarians.* Chicago: American Library Association.

Taylor, R. S. (1967). *Question-negotiation and information-seeking in libraries.* Bethlehem, PA: Center for the Information Sciences.

U.S. Department of Education. (1988). *Rethinking the library in the information age: Issues in library research: proposals for the 1990s.* Volume II. Washington, DC.

Weiss, C.H., & Bucuvala, M. J. (1980). *Social science research and decision-making.* New York: Columbia University Press.

Wholey, J. S., Hatry, H. P., & Newcomer, K. E. (Eds.). (1994). *Handbook of practical program evaluation.* San Francisco: Jossey-Bass.

Yin, R. K. (1984). *Case study research: Design and methods.* Newbury Park, CA: Sage.

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