Use It or Lose It: Prudently Using Case Study as a Research and Educational Strategy

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ABSTRACT

The overarching aim of this paper is to demystify the case study strategy in light of available literature. The paper presents a variety of case study designs for researchers to choose from that fits their research needs. It also seeks to position the case study strategy within the methodological framework of an inquiry that provides guidance to the novice researcher. Moreover, the use of triangulation in a case study strategy has been especially highlighted, followed by what could be the possible analytical techniques for data employed in this type of research. Careful selection of the case study design and the appropriate use of triangulation can enhance the quality of results.

Keywords: Case study, Case study design, Triangulation.

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1. INTRODUCTION

Choosing an appropriate methodology for a research can enhance the quality of its results; especially in the academics. It is basically the nature of the research question that will determine the type of methodology for a research. However, the dilemma is that the researchers are not fully aware of the proper match between the problem that is investigated and the chosen methodology, often leading to erroneous findings. Survey, grounded theory, action research, ethnography, and case study are some of the research strategies available for the researcher to choose from. Researchers have become accustomed to opting for a survey strategy; intentionally or unintentionally, without assessing its suitability for the problem at hand that needs investigation.

Case study is the least understood, research strategy and even researchers who are opting for it have only a bare minimum idea of its appropriate use. Case study methodology has been developed in light of eclecticism and pragmatism (Johansson, 2003). Case study is intended to conduct an empirical inquiry that aims at investigation of contemporary phenomena, keeping the context intact to get in-depth knowledge (Collis & Hussey, 2009; Mujtaba & Preziosi, 2006). Problems in organizations can be best understood when the context that gives rise to these problems are studied along with the core issue. Pulling out any phenomena from its natural settings cannot yield a thorough understanding of how it works.
or how it should work. Its applicability to real-life, contemporary, human situations and its public accessibility through written reports, facilitate an understanding of complex real-life situations (Soy, 2015).

2. HOW AND WHEN TO USE A CASE STUDY AS A RESEARCH STRATEGY

The research design is a general plan of how to answer the research question (Mujtaba & Scharf, 2007). It will consist of clear research objectives, derived from research question(s), specify the sources of data collection, and the limitations as well as the ethical issues pertinent to research (Saunders, Lewis, & Thornhill, 2009). According to Yin (2003a) the research design is a logical plan for getting from the initial set of questions to be answered and to a set of conclusions to those questions.

Harling (2012) defined case study as a holistic inquiry that investigates a contemporary phenomenon within its natural settings. According to Stake (1995) and Yin (2005); Imas (2009) has described case study as a method of learning about a complex phenomenon through extensive description and analysis of that instance in its contextual settings. The author further asserts that a case study emphasizes on thick descriptions, which means not just describing people, events, and places, but also interpretations of those who are most knowledgeable. Later the evaluator identifies the best explanation by applying the principle of relativity. Examining empirically a contemporary phenomenon in its real-life context; especially when the boundaries between phenomenon and context are not clearly evident, is a distinguishing characteristic of the case study (Yin, 1981; 2003a). The author has further stressed the use of case study research for explanation questions rather than incidence questions. It is the only viable method to elicit implicit and explicit data from the respondents (Zainal, 2007).

According to Yin (2003a) the distinctive need for case studies arises out of the desire to understand complex social phenomena. Organizational issues should be particularly studied as part of the overall system to see how it fits into the bigger picture of the organizational strategy. The context has an effect on the issues and problems that arise in the organization, it is therefore impossible to detach any phenomena from the context in order to analyze its “how” and “why”. To pull out any phenomena from its natural settings cannot yield a thorough understanding of how it works or how it should work.

Inclusion of the context is no doubt a necessary evil, creating several challenges for the researcher as more variables and factors have to be studied for the phenomena in question (Yin, 1981; 2003a) particularly when humans are involved (Harling, 2012). The author proposes that to understand an event, all aspects of that event need to be considered; making a situation unique. The case study method allows an investigator to retain holistic and meaningful characteristics of real-life events (Kohlbacher, 2006). This further implies that holistic inquiry involves collection of in-depth and detailed data that are rich in content and involve multiple sources of information; including direct observation, participant observations, interviews, audio-visual material, documents, reports, and physical artifacts (Harling, 2012). Case study design copes with a technically distinctive situation in which there will be many more variables of interest relying on multiple sources of evidence, and data needs to be converged in a triangulating fashion. According to Yin (2003a) case study research is an all-encompassing method, covering the logic of design, data collection techniques, and specific approaches to data analysis. According to Stake (1995) in a case study there is a tension between the case and the issue(s), as both compete for the researcher’s time. The ultimate result, in order to reach to some conclusion, the researcher has to ignore most aspects of the case.
3. CASE STUDY AND THE CASE

All the eminent authors who have contributed towards the development of the case study strategy (i.e., Yin, 1994; 2003a; Miles & Huberman, 1994; Merriam, 1988; Stake, 1995, 1978) agree on somewhat similar lines with respect to what constitutes a case study. Every case study must have a “case”, which is the object of study (Johansson, 2003). The author further boils down the key features of a case to the following:

- the “case” should be a complex functioning unit;
- it should be investigated in its natural context, using multiple methods;
- it should be contemporary.

Choosing a case for the study can be either intrinsic or done purposefully. When a researcher is interested in a phenomenon and wants to understand it rather than simply generalizing findings, the case selection will be intrinsic, but on the other hand, if a case is either unique, information-rich, critical, revelatory, or extreme the case selection will be purposeful (Stake, 1995; Patton, 1990). Moreover, the findings of a purposeful case are usually generalizable (Johansson, 2003) and the author further explains that generalizations from cases are analytical and not statistical. Generalizations are based on reasoning, using either the principle of deduction, induction, abduction, or even a combination of these (Johansson, 2003).

4. CASE STUDY DESIGN

Merriam (1988) suggests that case study research may be based on ethnographic, historical, psychological, or sociological orientations. According to the author, ethnographic case study research is used when one wants to explore the observable and learned patterns of behavior, customs, and ways of life of a culture-sharing group. The outcome of such an inquiry is a holistic description of the group, which incorporates the views of group members and the researcher’s perceptions and interpretations of the group’s functioning (Hancock & Algozzine, 2015). Historical case studies are often descriptions of events, programs, or organizations as they have evolved over a period of time. Historical case study research is not just a listing of chronological events, in fact it involves a researcher’s descriptive interpretation of factors, which cause events as well as results of the events (Hancock & Algozzine, 2015).

Examining literature and practices in psychology that are related to human behavior are a common feature of psychological case study research; however, sometimes organizations, programs, and events are investigated using the theories and concepts that have evolved over the years (Merriam, 1988). According to the author, sociological case study research focus on society, social institutions and relationships, and examines the structure, development, interaction, and collective behavior of organized groups of individuals. Topics often examined in sociological case study research include families, religion, politics, health care, demographics, urbanization, and issues related to gender, race, status, and aging (Hancock & Algozzine, 2015).

Yin (2003b) differentiated between a classic case study design, which comprises of a single case, with a multiple case study with two or more cases. The author has given a 2x2 variant matrix, according to which four types of case study designs are available for the researcher to choose from. These four designs have been labelled as Type 1- single case (holistic) design, Type 2- single case (embedded) design, Type 3- multiple case (holistic) design, and Type 4- multiple case (embedded) design. All these designs show the desire to analyze the case within its contextual framework, depending upon the type of research.
question posited, the extent of control an investigator has over actual behavioral events and the degree of focus on contemporary as opposed to historical events (Yin, 2003a). In short, the author has classified case study designs into exploratory, explanatory, and descriptive. According to Yin (1994) exploratory case studies attempt to explore any phenomenon which serves as a point of interest to the researcher. Exploratory designs seek to define research questions of a subsequent study or to determine the feasibility of research procedures, which involve fieldwork and information collection a priori to the definition of a research question (Hancock & Algozzine, 2015). The author differentiates explanatory designs as the ones that seek to establish cause-and-effect relationships. Descriptive designs furnish a complete description of a phenomenon within its natural context (Hancock & Algozzine, 2015; Tellis, 1997). According to Tellis (1997) exploratory cases are sometimes considered as a prelude to social research.

Stake (1995) and Harling (2012) classified case study research into intrinsic, instrumental, and collective case study. The former two are types of single case study design; whereas, the latter uses multiple cases. An intrinsic case study is done to learn about some unique phenomena; however, instrumental case study is done to get to some general problem, using a particular case, but a rationale for choosing that particular case needs to be provided. The aim of the latter is a generalization. According to Harling (2012) collective case study is carried out to provide a general understanding using a number of instrumental case studies that either occur at the same site or come from multiple sites, addressing the degree to which the focus is on the unique or the generalizable features of the case (Kohlbacher, 2006). Yin (2003a) has described these as analytical generalizations as opposed to statistical generalizations, each design entails a specific method.

5. THE CONFUSION ABOUT CASE STUDY

Yin (1981) has highlighted the confusion about the evidence (e.g. qualitative data), types of data collection methods (e.g. ethnography), and research strategies (e.g. case study). It is important to clear this confusion in defining case studies. A common misconception is that case studies are not only the result of ethnographies or participant observation, but Yin (1981) has proved with the help of examples where these features are missing from case studies. Even a case study which is normally believed to be a qualitative research can be limited to quantitative evidence (Yin, 2003a). Caution needs to be exercised and a case study design should not be confused with a "qualitative" research, which mostly relies on "ethnography", but an ethnographic research does not always produce case studies. Nor are case studies limited to just two conditions, as in the case of ethnographic research, i.e., use of close and detailed observation by the researcher and avoiding prior commitment to theoretical models. Thus, using ethnographies or participant observation should not always lead to case study research.

6. THE USE OF THEORY IN CASE STUDY

Using a single or multiple case study, the need, whether to use a theory or not has been debated by the authors and concluded in divergence. Stake (1995) favors absence of theory in case study because the focus is on describing the case and the phenomenon, but Yin (1994) opines that theory can be used to guide the case study in an exploratory way. Moreover, Creswell (1994) is in favor of using theory at the end of the study for comparison of the theory developed in the case study from the existing ones. Harling (2012) concurs with Yin (1994) and considers theory as a filter to organize the data collected, but the
researcher needs to be sensitive to enigmas between the case situation and the theory and pursue them when they occur.

7. TRIANGULATION IN CASE STUDY

In data collection, the principal of triangulation aims to find various kinds of sources in order to confirm the relevant information (Rahim & Daud, 2015). According to these authors, a case study research can consist of multiple data sources or multiple methods, which need to be brought together at some stage. Yin (2009) calls it as converging lines of inquiry. Using different data collection techniques within one study in order to ensure that the data are telling you what you think they are telling you, referring to “Triangulation”. A significant strength of the case study method involves using multiple sources and techniques in the data gathering process (Soy, 2015). Triangulation provides an important way of ensuring the validity of case study research (Johansson, 2003). Triangulation is not limited to data collection methods, but in addition to this, data sources, theory, or investigators might also be triangulated (Denzin, 1978).

A quantitative research starts with “why” as it searches for explanations, and qualitative research starts with “how” or “what” as it searches to promote understanding (Harling, 2012). Research, which fits in a pragmatic paradigm requires a combination of qualitative and quantitative data collection and data analysis techniques. The choices of which are dependent upon the research question(s), as well as the researcher personal judgement. The softer data, acquired from qualitative approach, complements the hard facts obtained from statistical tests. Triangulation is used to to bring together different, but complementary kinds of data (Morse, 1991). Researchers using this approach directly compare quantitative and qualitative forms of evidence After analyzing the data sets independently, the researcher attempts to merge them by comparing or synthesizing the separate results or by transforming one data type into the other type to facilitate relating the two data types (Clark, Huddleston-Casas, Churchill, Green, & Garrett, 2008). The findings are validated when patterns from two different sets of data coincide; however, differences urges the researcher for further probing to identify the cause or source of conflict (Soy, 2015). The aim is to produce analytic conclusions answering the "how" and "why" research questions.

A case study can be carried out by using either qualitative or quantitative evidence or a combination of both types of evidence (Gerring, 2007). Johnson and Onwuegbuzie (2004) stress the use of both qualitative and quantitative research in a case study. This can be referred to as mixed-method research. The aim of a mixed-method research is not to replace either approach, but rather to draw from the strengths, while minimizing the weaknesses of both into a single research study and cross-study (Johnson & Onwuegbuzie, 2004). The authors consider conducting a fully objective and value-free research is a myth. Saunders et al., (2009) also encourage the use of multiple sources of data in a case study research. Triangulation provides an important way of ensuring the validity of case study research (Johnsson, 2003). The author asserts that case studies develop through the mastery of triangulation, i.e., the combination of different levels of techniques, methods, strategies, or even theories. Triangulation checks out for consistency which increases the credibility of the research (Imas, 2009).

Tellis (1997) refers to case study as a triangulated research strategy. Stake (1995) has referred to the use of protocols to ensure accuracy and alternative explanations are called triangulation. The need for triangulation arises from the ethical need to confirm the validity of the processes. In a case study, this could be done by using multiple sources of data (Yin, 1994). According to Hartley (1994) case study research design can even be used with other research strategies to address related research questions in
different phases of a research project. The author proposes that a further strategy would be to start with exploratory case study research and then to test the emerging findings with a survey-based research (Kohlbacher, 2006). The problem in case studies is to establish meaning rather than the location (Tellis, 1997).

Mixed methods research can permit investigators to address more complicated research questions and collect a richer and stronger array of evidence than can be accomplished by any single method alone. Bryman (2006) confirms that there are relatively few guidelines about ‘how’, ‘when’, and ‘why’ different research methods might be combined. Authors who adopt a formalized strategy, use many examples to illustrate their ‘types’, but we have relatively little understanding of the prevalence of different combinations—though there are some exceptions to this statement. According to Greene, Caracelli, and Graham (1989) there are five major purposes for conducting mixed-methods research, such as triangulation, complementarity, initiation, development and expansion; whereas Morse (1991) has provided nine mixed-method designs. Johnson and Onwuegbuzie (2004) have left it to the researcher’s choice to operate largely within one dominant paradigm or not, and whether to conduct the phases concurrently or sequentially, as shown in figure 1. Nonetheless, these authors argue that the findings must be mixed or integrated at some stage. Bryman (2006) has asserted adequate use of survey methods and qualitative interviews in different mixed researches. The designs are distinguished by the timing, weighting, and mixing of the quantitative and qualitative elements (Creswell & Plano Clark, 2007). Depending upon the nature of the research question and the ability of a researcher to use different methods, mixed methods research opens a class of research designs that deserve consideration (Yin, 2003b).

The mixed-method designs are distinguished by the timing, weighting, and mixing of the quantitative and qualitative elements (Creswell & Plano Clark, 2007). The results of the two different data sets can be either merged for more comprehensive results, qualitative data can be connected to quantitative data, which lead to results, and qualitative data can be embedded into the quantitative data or vice versa. Although adopting two methods in a study are cumbersome, it provides the researcher the opportunity to draw upon the strengths of each method.
8. CASE SELECTION CRITERIA AND SCREENING PROCEDURES

Selection of cases is the most difficult step in research design, as one can always fall prey to different traps, such as one's emotions and experiences, and the resultant inclusion or exclusion of case(s) might not be a true representative sample of the study. Sometimes a wrong case can tempt the researcher due to easy accessibility to data or acquaintance with the people and the place. On the other hand, a prospective case might be missed out simply because it puts you off for similar or different reasons. Selection of cases must be based upon certain criteria. According to Stake (1995) in a case study analysis the number of cases is not that important as the inclusion of numerous relevant characteristics. Keeping this principle in mind, balance and variety need to be properly addressed, which are important opportunities to learn. Eisenhardt (1989); Patton (1990) and Perry (1998) along with other authors suggest that the selection of the cases should be based on “theoretical sampling” rather than “random sampling”. According to Glaser and Strauss (1967) theoretical sampling is the process of collecting data from relevant cases to generate a theory. Yin (2003a) supports these authors by putting forward the concept of “theoretical replication”. Patton (2002) has suggested the use of purposive sampling for selecting information-rich cases among potential cases; for deeper knowledge of the problem at hand.

9. HOW TO DIFFERENTIATE BETWEEN A CASE AND UNIT OF ANALYSIS

Yin (2003a) considers a “case” as a problematic thing. What constitutes a case in case study research is one of the fundamental questions that needs a clear and comprehensive answer before proceeding with the research. According to Stake (1995) a case can be defined as an “integrated system” bounded by time and place. A similar definition has been extended by Miles and Huberman (1994) as a phenomenon of some sort occurring in a bounded context. The “case” is, in effect, the unit of analysis (Miles & Huberman, 1994). These authors have diagrammatically shown the unit of analysis by a circle enclosing a heart in the middle. The heart is symbolic focus of attention surrounded by context. The context in which the unit of analysis exists; according to these authors, is bounded by setting, concepts, and sampling; thus, defining its boundary. A case is monolithic and always occur in a specified social and physical setting, unlike in quantitative studies where individual cases are devoid of their context (Miles & Huberman, 1994).

Tellis (1997) agrees with Miles and Huberman (1994) by declaring the unit of analysis as a critical factor in the case study. The authors label it as a system of action rather than an individual or group of individuals. Yin (2003a) argues that the unit of analysis irrespective of the research design, whether it is a single case study or multiple case study can be holistic or embedded. Proper identification of the unit of analysis makes the perspective of the researcher clear by limiting the boundaries. According to Yin (2003a) another significance of defining the unit of analysis is that the findings of the case study will pertain to specific theoretical propositions about the defined unit of analysis. While describing the case the researcher has taken a slight diversion from what has been suggested by Miles and Huberman (1994) by distinguishing between the case and unit of analysis, not in principle but in practice. Pare’ (2004) has given some useful insights and concepts for specifying the unit of analysis in case study research, i.e., a unit of analysis must be as specific as possible and must be related to the initial research question, and each case should be bounded by a system. Yin (2003a) stresses that unit of analysis must relate to the way the initial research questions have been defined and the generalizations desired at the project completion. This also guides the researcher in identifying the unit of analysis. Taking Yin’s point further, if research
question(s) do not lead to the favoring of one unit of analysis over another, they may be either too vague or too numerous (Paré, 2004). To sum up, a “case” represents somehow the interesting topic of the study empirically; on the other hand, a “unit of analysis” is the actual source of information: individual, organizational document, artifact (Yin, 1994). Various disciplines have used individual as a unit of analysis and case study method has been used to extract comprehensive understanding about people (Zucker, 2009). Examples in psychology (Bromley, 1986) sociology (Creswell, 1994; Yin, 1994) and in education (Stake, 1978; 1995) have studied the individual as the unit of analysis.

10. ANALYZING THE EVIDENCE

Tellis (1997) argues that the analysis of a case study methodology is the most difficult yet the least developed process. There are several steps involved in this process which must follow a logical sequence. Yin (2003a) maintains that data analysis consists of examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence, to address the initial propositions of a study (Kohlbacher, 2006). In a mixed study the data analysis should tell which data could be analyzed first and why should one data analysis take precedence over the other, or if both types of data are to be analyzed simultaneously than the purpose behind this analysis should also be made explicit by the researcher at the analysis stage. According to Neuman (1997) generally data analysis means a search for patterns in data. Once a pattern is identified, it is interpreted in terms of a social theory or the setting in which it occurred, and that the qualitative researcher moves from the description of a historical event or social setting to a more general interpretation of its meaning (Kohlbacher, 2006).

According to Yin (2003a) unlike statistical analysis, there are few fixed formulas or cookbook recipes to guide the novice. The author agrees that much depends on an investigator’s own style of rigorous empirical thinking along with the sufficient presentation of evidence and careful consideration of alternative interpretations. All empirical research studies, including case studies, have a “story” to tell, and like every story, it has a beginning, middle, and an end, but differs from a fictional account (Yin, 2003a). The author sanctions that needed analytic strategy is ones guide to crafting this story and only rarely will your data do the shaping of the story. Case studies are multi-perspective analyses (Tellis, 1997). This means that the researcher not just considers the perspective of the respondents, but also of the relevant groups of actors and how they interact with each other.

According to (Yin 2003a) the researcher has a choice of using from two general analytic strategies (relying on theoretical propositions and developing a case description), and a few analytic techniques (pattern matching, explanation-building, and time-series analysis) for better analysis of the case study evidence. Having a general analytical strategy will help in choosing a technique, as the latter is a part of the former.

The first technique is pattern matching-comparing empirically based patterns with the predicted ones; we consider it as the most desirable technique for case study analysis. If patterns coincide, internal validity is enhanced. There are further three techniques used in pattern matching; Patterns can be matched with the expected outcomes to see that initially predicted results are found and alternative patterns are absent. Rival explanations as patterns is concerned with looking for some of the theoretically salient explaining conditions might be articulated in empirical findings; then the presence of certain explanation should exclude the presence of others (also see Yin, 1994; Tellis 1997). The third is simpler patterns, which refers
to matching patterns using only a few variables; however, this is possible if the derived patterns are predicted to have enough clear differences.

According to Yin (2003a) explanation building technique analyzes the case study by generating and building an explanation about the case. This procedure is of particular importance to explanatory case studies. Explanation is a result of a series of iterations. The aim is not to terminate a study, but to generate and develop ideas for further study.

Time-series analysis deals with the “how” and “why” questions about relationships and the changes that have occurred in events over a period of time. This requires prior identification of a sequence of events that are expected to produce an outcome and comparing this trend with what the empirical findings suggest (Yin, 1994). The author suggests that comparing this trend with some rival trend to rule other possibilities.

Another technique applies specifically to the analysis of multiple cases (the previous four techniques can be used with either single- or multiple-case studies). This technique is known as cross-case synthesis technique. The technique is especially relevant if a case study consists of at least two cases (for a synthesis of six cases, see Ericksen & Dyer, 2004). The analysis is likely to be easier and the findings likely to be more robust than having only a single case. Cross-case syntheses can be performed even if the individual case studies are conducted as independent research study and later aggregating findings across a series of individual studies for synthesis of findings.

11. SUMMARY

Case study method can be used more consciously if the researcher is aware of its meaning, application, and the available designs. It is a far more creative alternative to traditional approaches to research, taking into consideration the researcher’s perspective at each and every step of the inquiry.

The soul of case study methodology is triangulation- the combination of different levels of techniques, methods, strategies, or theories. The use of triangulation in case study research is not something uncommon, but there are misconceptions and confusion about its utility. Triangulation in a case study research can further improve the robustness of its findings, where one set of data either validates or negates the findings of the other set, but in both cases it adds something to the final results.

Finally, a very cursory view of data analysis has been provided, which is mainly inspired by Yin. Although, several authors have provided their expert opinion on data analysis using a case study strategy, but it was difficult to cover all those opinions in this paper.

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