

Demystifying Case Study Research in Agricultural Extension Education

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Abstract: *Case study research has been influential in academia and widely used in numerous disciplines. Although the study presents useful problem-solving and critical thinking skills, there still exist several methodological flaws that demonstrate the question of integrity, transferability, reliability, and generalizability. It has been evidenced that case study research occupies a robust lens in pedagogy; however, techniques remain controversial, and it has not obtained a straight definition for scholars in the field. The poor, erratic, and misleading methods have presented numerous doubts in their application. This paper, therefore, aims at demystifying case study research, types of case study research, and determinants of the use of case study research in agricultural extension education. The study employed a narrative literature review in three databases: Google, Semantic Scholar, and Google Scholar, in which 21 out of 46 articles were reviewed to answer the three research questions. The study reveals seven types of case study research that could be applied in agricultural extension education. The researcher's practical experience, closeness to the site, and critical understanding of the phenomenon are highly imperative in case study research. A detailed description of the situation, its implication, good knowledge about the people affected, and the time allotted for the inquiry are keys to case study research. Among other recommendations, scholars in agricultural extension education should understand the determinants of the use of case study research for appropriate application to ensure quality theses, dissertations, and research papers.*

Keywords: Agricultural Education, Agricultural Extension, Agricultural Extension Education, Case Study Research, Determinants, Types of Case Study

Introduction

Although the meaning of case study research seems unclear to many researchers in Agricultural Extension Education, it continues to be widely used in the discipline and other social sciences. Dwyer and Maredia (2021) defined Agricultural Extension Education as a programme that presents new knowledge, information, and innovative approaches from agricultural researchers or research institutes to learners and local communities through teaching diversification as well as outreach and technology transfer to enhance their knowledge and understanding and improve their living standards. Agricultural Extension Education focuses on teaching rural people how to obtain an improved livelihood through the enhancement of their farming systems, homes, and community institutions (Leagans, 1961). In this study, Agricultural Extension Education is a programme designed to impact knowledge and skills and transfer innovation and technology from educators and trained specialists through teaching and learning principles with the aim of initiating desirable modifications in learners' attitudes, values, and beliefs for an improved standard of living. Scholars of Agricultural Extension Education have recognised case study research as occupying a strategic lens with regards to pedagogy; however, several misconceptions are found in its

appropriate usage, types, and strategies (Kelsey, 2007). Case study research presents useful problem-solving and critical thinking skills that emanate from studies conducted on a small group of people and later generalise to a larger population with diverse characteristics, geographical settings, associations, and other social groups within a specific time frame (Flick, 2018; Sherman *et al.*, 1998; Yin, 2003).

Case study research has been influential in developing a rigorous paradigm that assists in revising three undergraduate Extension Education courses at North Carolina State University, thereby resulting in improvements in the course content (Donaldson, 2017). A collaborative model of programme planning has been demonstrated by non-formal educators in agricultural extension education through case study research; thus, the model assists participants in engaging in group dynamics while drawing on expert experience (Cafarella & Daffron, 2013). In addition, case study research has also proven imperative in rating extension agents' performance through appraisal standards, which provide a clear understanding of extension workers terms of reference (Donaldson, 2017). Rogers (2003) outlines 54 dissimilar case studies in a diffusion of innovation paradigm that authenticates material content and absoluteness in cooperative extension. The frequent appearance of case study research in international journals, professional training, conference proceedings, and practicum shows wide use of the study in academia (Yin, 2018). Between 2001 and 2010, conference papers and management journals published case study research in 2,407 articles; the number continues to rise as case study research becomes more frequent in agricultural extension education and other disciplines (Takahashi & Semprebom, 2013). Meanwhile, many authors and university students writing theses and dissertations in agricultural extension education lack the proper understanding of the meaning, types, and determinants of appropriate case study research in the field. Case study research is difficult to generalise to a larger population, thus pointing out that the validity of the study is questionable (Brunt *et al.*, 2017). It presents several challenges in confirming or disconfirming integrity, transferability, and reliability, which are valid tools in ranking the contribution of a study (McGehee, 2012). Numerous critiques have been levied by positivists against case study research, which include a deficiency in objectivity, a lack of coherency, and an inability to generalise accurately, hence interrogating the consistency and trustworthiness of the information (Decrop, 2004). Johansson (2003) added that the trustworthiness of case study research could be strengthened through the triangulation of diverse sets of data that assist in answering the questions of validity and reliability. Yin (2014) also argues that case study research is difficult to reveal coherently and does not scientifically probe into phenomena. This has resulted in a shallow point of view, a lack of focus on specific evidence, and unclear research procedures. There exist several misconceptions over the quality and ethics of case study research; hence, authors have failed to articulate the virtues and vices; they continue to expand their ignorance and interpretation in diverse contexts (Yin, 1981). Case study research, though widely used in agricultural extension education, has not obtained a straight and regular definition; rather, it has been defined erratically, poorly, and misleadingly (Wynsberghe & Khan, 2007). Takahashi and Araujo (2020) argue that even within the different knowledge of research, there still remain doubts over the correct use of case study research. Ricketts *et al.* (2018) also asserted that there are several case studies of research conducted in agricultural extension education that require thorough understanding both in framework and conceptualization; hence, the inability of the researcher to explicate such studies in a more detailed perspective presents more doubt within the field. However, many scholars in agricultural extension education have disregarded and ignored the importance of understanding the appropriate usage of case study research and thus continue to increasingly apply it in their scholarly articles and research works. To enhance the appropriate utilisation of case study research in agricultural extension education, this paper seeks to:

1. clarify misconceptions of what constitutes case study research in Agricultural Extension Education;
2. describe the types of case study research that exist in Agricultural Extension Education; and
3. state determinants for the use of case study research in Agricultural Extension Education.

Methodology

The study adopted a narrative literature review but included narrative procedures. We employed an electronic search in three databases: Google, Semantic Scholar, and Google Scholar, and used three search terms: 'Agricultural Education', 'Agricultural Extension', and 'Case Study Research'. The inclusion criteria were all types of articles published on case studies that related only to human beings. In general, the evaluation method for inclusion eligibility was conducted using Introduction, Methods, Results, and Discussion (IMRaD). Any published paper with IMRaD features was considered an article in this study. The exclusion criteria were articles for which full text was not available, were not in English, or were extremely old literature. From the 44 articles retrieved in the first round of searches, two additional references were identified by a manual search among the cited references. Out of the 46 articles identified, 25 were excluded based on the relevance of the journal, content redundancy, and articles published earlier than the year 2000. Finally, 21 articles were reviewed to clarify misconceptions about what constitutes case study research, describe the types of case study research, and identify determinants for the use of case study research in Agricultural Extension Education.

Concept of Case Study research in Agricultural Extension Education

A case study research is defined as an in-depth study involving a minute portion of a targeted population with the aim of generalising the outcome to a larger audience after observing patterns, behaviours, and causes of the problem. Eckstein (2002) defines case study research as an occurrence where researchers present information and give meaning to a narrow component of a natural phenomenon affecting a wider geographical region. In view of Yin (2003), case study research is an experimental investigation that navigates into a present-day reality for which the connection between the problem and the causes is visibly laid out by evident and achievable recommendations. It is a rigorous and watchful selection of situations and a systematic congregation of facts that are properly confirmed, with the aim of reflecting the true meaning of the situation (Wynsberghe & Khan, 2007). When designed properly, there is promising evidence that case study research in Agricultural Extension Education could enhance scholars understanding through the application of theoretical knowledge in real-life situations, helping them to develop their ability to deliberate beyond the academic ecosystem and improve their interactive and problem-solving skills (Donaldson, 2017). As indicated in figure 1, what actually constitutes case study research in Agricultural Extension Education must derive from the researcher's closeness to the study setting and their interpretation, which would be influenced by rich experience about the phenomenon (Wynsberghe & Khan 2007). This implies that the choice of process must be based on what the researcher has experienced and driven by the lens through which the issue has been addressed. Seven common attributes that constitute case study research in agricultural extension education are presented as follows:

Attribute 1: Small n; this indicates that case study research focuses on a small component of a larger population, with a smaller sample being scrutinised as compared to survey research. Any attempt made by the researcher to increase the sample size might lead to a reduction in the strength of the case (Gomm et al., 2002; Yin, 2004).

Attribute 2: Contextual details; must present evidence indicating the research report is fully comprehensive in exploration and framework and demonstrates the researcher's robust understanding and involvement in the entire investigation (MacDonald & Walker, 1977).

Attribute 3: Natural settings: research is conducted in locations where the researcher has little or no influence over the features of the population, phenomena, or association with the setting (Yin, 2003).

Attribute 4: Boundaries: The study should provide detailed information regarding coverage before generalising the findings; hence, the researcher should allocate ample time to allow access to targeted study areas and populations (Merriam, 1988).

Attribute 5: Working hypotheses and lessons learned; involves the researcher's ability to forecast the outcome of the inquiry from the study, thus presenting additional new findings in a real-life situation about individuals and organisations (Eckstein, 2002).

Attribute 6: Multiple data sources; the use of many sources of data spurred researchers to utilise more data collection methods, thereby enabling valid and reliable information to be generalised to a larger population (Yin, 2003).

Attribute 7: Extendibility: When conducted properly, researchers are able to integrate valuable information from the audience for an improved perspective that provides insight into the phenomenon (Amata et al., 2022).

Misconceptions of Case Study Research

Case study research fits into several studies regardless of method, methodology, and design; this has caused numerous studies to deviate from their original sense (Corcoran et al., 2004). The qualitative or quantitative nature of the data does not justify the use of case study research; thus, the angle at which the phenomenon can be clearly understood and critically analysed requires thorough attention (Ricketts et al., 2018). Case study research differs from methodology, method, and research design because the researcher involved does not collect statistical raw data utilising case study methodologies. A researcher draws on different research methods, enabling manipulation of the information intended for the study and, hence, generalisation of findings (Corcoran et al., 2004). In addition, case study research also differs from methodology since the study presents no theoretical or analytical procedure for the researcher to follow during the time of inquiry (Stake 2005). Moreover, the researchers might use self-ingenuity to initiate models for the study. The rudiment of Stake's argument was that case study research provides no conventional model for how a researcher conducts his investigation, and for this reason, it cannot be referred to as a method. Therefore, case study research is not a methodological choice but a choice of what is to be studied.

Types of case study research in Agricultural Extension Education

There are six (6) types of case study research that are frequently used in Agricultural Extension Education (Baxter & Jack, 2008; Yin, 2003).

1. **Intrinsic case study research:** a case study conducted for a thorough understanding of a natural phenomenon, with the researcher having vital interest and curiosity to collect valid information that affects the target audience. An intrinsic case study research is not intended to unpack the existence of insubstantial phenomena or present a model in agricultural extension education but to reveal issues that adversely affect marginalised populations.

2. **Instrumental case study research:** This is a case study conducted to assist the researcher in gaining a deeper understanding of why a scenario occurs and revealing the theory that underpins a problem in agricultural extension education. The main focus of instrumental case study research is the rationale behind the problem, with the case serving as a supportive arm of the investigation. In addition, the researcher endeavours to find some outward reasons that support findings, with the choice of case being only to advance the understanding of the scenario in agricultural extension education.
3. **Collective case study research:** In this type of research, the researcher studies several cases with the aim of examining the actual situation, affected individuals, and conditions that affect the general public in relation to agricultural extension education. In other words, it is conducted when an instrumental study probes further investigation into an issue with the assistance of many cases. In addition, several individual cases are chosen to broaden the researcher's understanding with the supportive generalisations of the previous studies.
4. **Explanatory case study research:** The researcher strives to illustrate his understanding of some natural phenomena that are difficult to capture through experimentation and survey methods in agricultural extension education. The researcher draws on his experience to explore the issue, relying on an investigatory procedure that links every facet of the study, thus providing a valid answer to the intriguing question. Moreover, explanatory case study research usually provides answers to natural phenomena that seem uncommon to the researcher.
5. **Exploratory case study research:** This type of study aims at launching a re-investigation into an issue that has previously been explored but could not present a succinct remedy. Researchers in agricultural extension education strive to disclose other underpinning factors that have caused the problem and document the findings and implications.
6. **Multiple-case study research:** The study enables researchers to investigate alternating factors that cause different cases to occur. It is conducted with the intention to duplicate outcomes from previous investigations in order to render judgements that could be more beneficial to participants in agricultural extension education. It is imperative for the researcher to strategically select cases that could present comparable outcomes across the larger population or forecast contradictory outcomes that corroborate with the model.

Determinants of the use of case study research in Agricultural Extension Education

Scholars in Agricultural Extension Education undertake case study research for diverse reasons, ranging from; an investigator's craving to understand how and why a phenomenon continues to occur, having less influence over the behaviour of individuals in the study area, or a desire to obtain the most current update on an issue (Yin, 2014). Based on the in-depth nature of case study research, extension educators ought to be cognizant of the determinants of the use of case study research in Agricultural Extension Education (see figure 1)

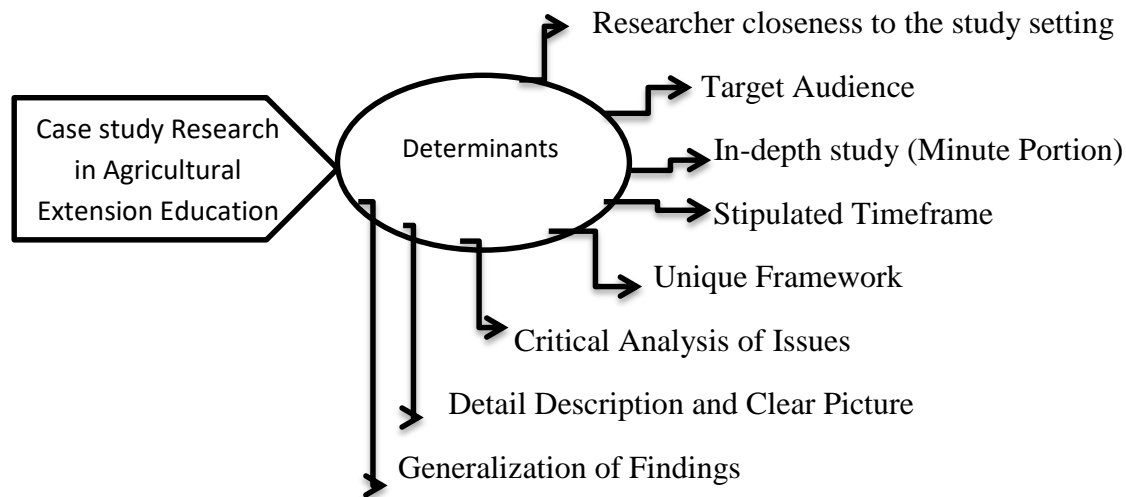


Figure 1: Determinants of Case study Research in Agricultural Extension Education

Researcher's Complete Knowledge of the Situation: The researcher needs to have a robust understanding of what has been investigated before conducting the inquiry, thus focusing more attention towards the angle from which the phenomenon can be clearly understood. Yin (2018) acknowledges that researchers who intend to conduct case study research should be spurred to fill in a higher set of expectations with good writing skills and be willing to demonstrate transparency about the procedure of inquiry.

Researcher closeness to the study settings: The researcher's closeness to the study site is crucial, and interpretation should be influenced by rich experience and full involvement in the entire investigation. Considerable practical experience and intimacy of the researcher with the area of investigation and research tactic for solving the complex issue with valid evidence are imperative in case study research (Ragin 2013).

Target Audience: The researcher must target a specific audience and show curiosity in extracting valid information that affects the audience. Case study research, therefore, should be deliberated from an analytical and holistic perspective that captures all aspects of a phenomenon using a theoretical lens that stretches beyond the limits of the studied audience. Petrovski and Neto (2017) found that careful selection of the target audience may save resources, especially when a researcher understands who their audience is and their unmet needs.

In-depth study: The researcher's in-depth knowledge about a minute portion of the population for thorough investigation is critical in case study research conducted in agricultural extension education. Hollinshead (2004) argues that case study research can become more relevant if the researcher endeavours to conduct inquiry on a small segment of the environment that is unexplored and for which there is little or no evidence of previous research. Stake (2005) added that the longer a scenario is investigated on a small portion of a population, the deeper the researcher gains additional insights that provide a clear standpoint in the inquiry.

Stipulated Timeframe: Case study research should intensely investigate a succinct issue within a stipulated and reasonable time limit; thus, the researcher should be cognizant of the time needed to fully investigate the issue. Settle and Shaw (2018) posited that case study research does not justify holistic or analytical investigation, but judgement should be anchored on the time stipulated for the inquiry. Schoch (2020) added that case study research is usually

based on several data sources and must target a particular geographical setting within a specific timeframe.

Unique Framework: Case study research must be conducted using a holistic platform with a clear understanding of a unique framework that offers a more detailed perspective with minimum doubt. Corcoran et al. (2004) found that case study research that presents a unique framework could transform and improve practise.

Critical Analysis of Issues: Case study research needs to be critically analysed, with the researcher paying rigorous attention at the angle where the phenomenon can be clearly understood. Both the case study research and critical analysis inform the researcher's decision in constructing interpretations (Baxter & Jack, 2008).

Detail description and clear picture: Case study research needs to be deliberate, presenting a detailed description of a phenomenon through a clear picture and good knowledge of the situation, its implications, and the affected individuals within the study area. Case study research in agricultural extension education needs to be watchful, with a key interest in bringing out a detailed description of the phenomenon through an unblemished picture that is based on the researcher's flawless understanding of the situation, implications, and individuals affected (Creswell, 2002).

Generalisation of Findings: Findings should only be generalised after the researcher has conducted a thorough investigation of the phenomenon with ample time to enable access to the entire study area. Variables and triangulation play a significant role in case study research, and this could be achieved through generalizable theoretical propositions that substantiate the standpoint of the researcher (Yin 2013).

Conclusion

Several misconceptions and doubts exist over the proper usage of case study research in Agricultural Extension Education. Meanwhile, case study research has persisted as one of the most widely used research approaches despite numerous methodological flaws. Many researchers in Agricultural Extension Education find it difficult to understand the meaning, types, and determinants of its usage in the discipline. Often, the data collected by case study researchers is difficult to generalise to a larger population and typically presents problems of validity and reliability. Case study research specifically looks at a succinct issue within a stipulated time frame and the angle from which the phenomenon can be clearly understood and critically analysed. Agricultural Extension Education researchers need to demonstrate a thorough understanding of the phenomenon being investigated, drawing on experience and key interests in presenting a detailed description of the problem. This could be achieved through variables and triangulation interplaying a significant role within the determinants, as illustrated in Figure 1 above.

Recommendations

1. This study seeks to provide clarification on the misconceptions that exist about the use of case study research in Agricultural Extension Education. Scholars and teachers in agricultural extension education, after thoroughly going through the paper, will be able to evidently explicate the meaning of case study research. They should be able to read between the lines and understand the misconceptions that exist in the field so that they can inform students about the proper application of case study research.

2. Universities and college students writing theses and dissertations in Agricultural Extension Education after assimilating this paper, be able to understand the types of case study research that could be appropriate for their thesis or project work
3. Teachers in Agricultural Extension Education should also understand the appropriate determinants for using case study research, thus enabling them to guide their students during thesis and dissertation planning, which will facilitate the students' thorough understanding of both structure and conceptualization
4. Future researchers should endeavour to utilise this document as a point of reference that would support them in clarifying any confusion about whether or not case study research should be conducted

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Conflict of Interest

There is no known financial and non-financial conflict of interest among the researchers during and after the research work.

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