

Understanding the Rudiments of Research design and Methodology in Qualitative and Quantitative Researches

By

AKPAN, E. Ebenezer, *Ph.D, FCICN, AP, PPGDCA, PHDCDPM*
Corporate Institute of Research and Computer Science
140 Ikot Ekpene Road
Uyo, Akwa Ibom State

&

ATAKPA, Arit Okonobong (*Ph.D*)
Department of Early Childhood Education,
Akwa Ibom State College of Education,
Afaha Nsit

ABSTRACT

An appropriate research study relies on the quality of research design adopted for the study. It is in order to understand the rudiments of research design that this work is carried out. Research design have been viewed as a plan or structured framework of how one intend conducting the research process in order to solve the research problem. The components of research design discussed here include: interpretive paradigm, ontological and epistemological considerations, qualitative approach and quantitative methods of research design. The characteristic of quantitative approach is the scientific search for 'cause and effect', while the qualitative approach is the search for an understanding of human experience. In the qualitative approach process the researcher has a major role to play as it is through the researcher's eyes and ears that data are collected, information is gathered, settings are viewed, and realities are constructed" The main difference between quantitative and qualitative approach fall on the distinction between 'explanation' and 'understanding' as the focus of exploration. The use of case study is necessary when the researcher has little control over the events related to the social phenomena. Three variations in case studies that are linked to the intent of the case analysis were recognized to include: the single instrumental case study as the first variable in which the researcher looks at an issue and chooses a case; The second one is the intrinsic case study that emphases on the case itself, because in this case the case presents a unique situation. The third variation of the case study is the collective or multiple case studies. In summary the methods that will be employed in the analysis of data rely solely on the type of research design adopted. Hence care must be taken on the type of research design adopted for a study as it affects the outcome of the study.

KEYWORDS: Concept of Research design, Research paradigm, Ontological assumption, Epistemological assumption

Introduction

An appropriate research study relies on the quality of research design adopted for the study. In agreement to this assertion, Flick (2007) argues that the quality of any research project is enhanced by solid crafting of the research design. Therefore, in line with Flick (2007) position, I commenced this work with the conceptualisation of a good research design, this was subsequently followed by the choice of paradigm which was critically explained.

Concept of Research design

In the opinion of scholars such as Scott and Morrison (2006), every researcher is a designer. For instance, in a profession such as town planning, it is obvious that a town planner would diligently structure and come out with a clear layout of the city before the actual commencement of the build-up of the city. From the educational perspective, researchers would not begin data gathering of any kind without an appropriate research design. This is because embarking on such a mission would render the research findings unreliable (Hancock, Ockleford & Windridge, 2009). Supporting this assertion, Maree (2011) avows that the adoption of an appropriate research design is a panacea that road-mapped any study to its logical conclusion. Now is pertinent to give brief definitions of research design.

In the context of the meaning of research design, Scott and Morrison (2005), refers research design to the schema or plan that constitutes the entire research study. In another vein, Babbie and Mouton (2007) view research design as a plan or structured framework of how one intend conducting the research process in order to solve the research problem. From the point of view of Babbie and Mouton (2007), the methodology and methods which a researcher adopts in conducting his/her research is what research design stands for.

From the perspective of McMillan and Schumacher (2009), a research design is a blueprint of research that deals with four problems namely; what questions to study, what data are relevant, what data to collect and how to analyse the data. This view gives credence to the formulation of appropriate and acceptable research questions since this will act as a guide in arriving at a workable research design. In furtherance to the above assertion, a particular research design informs the researcher the importance of certain data and the nature of the said data to his/her study. The methods that will be employed in the analysis of data rely solely on the type of research design adopted (Scott & Morrison, 2009). In summary, it may be concluded that a research design demonstrates that the problem for exploration is doable given available resources (McMillan & Schumacher, 2009). In this study, research design is made of the following components: interpretive paradigm, ontological and epistemological considerations, qualitative approach, methodology and methods that are unpacked below.

Research paradigm

The concept 'paradigm' is derived from a Greek word *paradeigma*. In the 15th century, this concept was first introduced in English to mean 'an example or pattern'. However, for over 400 years, the word 'paradigm' was mainly used in English language to sort the verbs, nouns and other parts of speech. The use of paradigm in English language continued until 1960s, when

David Baltimore used this term to refer to a theoretical framework in his research work on cancer (Mackenzie & Knipe, 2006). Baltimore's application of paradigm in his study necessitated other scholars not only in natural sciences but also in social sciences and education to use this term to conduct research study.

Types of research paradigms

In the context of types of paradigms, scholars such as Greene, Benjamin and Goodyear (2001) say that there are three research paradigms namely: positivism, post-positivism and interpretivism. However, a researcher like Coe (2012) reports that there are four types of paradigms and it include: positivist, post-positivist, critical and interpretivist paradigms.

a. Positivism

Positivism has been conceptualised by numerous researchers over the decades. For instance, Krauss (2005) argue that positivism embraces a four point doctrine. These doctrines are: (a) the rule of phenomenalism, which asserts that there is only experience, all abstractions be they "matter" or "spirit" have to be rejected; (b) the rule of nominalism – which asserts that words, generalisations, abstractions, among others are linguistic phenomena and do not give new insight into the world; (c) the separation of facts from values; and (d) the unity of the scientific method (Krauss, 2005, p.761). Bisman (2002) sees positivism as an epistemology which seeks to explain and predict what happens in the social world by searching for regularities and causal relationships between its constituent elements. In conclusion, positivism prevails in science and assumes that science quantitatively measures independent facts about a single apprehensible reality (Healy & Perry, 2000).

b. Post-positivism

According to Zammito (2004), post-positivists believe that a reality exists, though he holds that it can be known only imperfectly and probabilistically. Ryan (2013) opine that post-positivism stress meaning and the creation of new knowledge, and are able to support committed social movements, that is, movements that aspire to change the world and contribute towards social justice. In postpositivism, it is believed that human knowledge is based not on unchallengeable, rock-solid foundations, but rather upon human conjectures (Zammito, 2004).

c. Critical paradigm

Critical paradigm is another school of thought that emphasises the reflective assessments and [critique](#) of [society](#) and [culture](#) by applying knowledge from the [social sciences](#) and the [humanities](#) (Morgan, 2012). In other words, critical paradigm is particularly focused on the issue of power relations within the society and interaction of race, class, gender, education, economy, religion and other social institutions that contribute to a social system (Asghar, 2013). However, critical paradigm does not only highlight and explain these social factors that cause oppressive and powerful groups to dominate the suppressed and repressed section of society, but it also strives for a social set up based on equality for all the members (Bohman, 2013).

d. Interpretive paradigm

The interpretivist tradition has exerted a strong influence on education research over the past 40 years. Interpretive paradigm is seen as an alternative to the positivist paradigm (Ponterotto, 2005). Interpretive paradigm in its purest form separates itself from social constructionism, adherents of which argue that social reality can be described in different ways, all of which are equally valid (Scott & Morrison, 2005). An interpretive researcher assume that our knowledge of reality is gained only through social construction such as language, consciousness, shared meanings, documents, tools and other artefacts. Interpretive researchers argue for the uniqueness of human inquiry, therefore, to completely comprehend human action by means of interpretations is to argue for an altogether different aim from natural science.

If people take action on the ground of their interpretation of the actions of others, then meaning interpretations themselves are causal for humans. This is not true in nature. This billiard ball does not make sense of its environment. But the human actor in society does and different humans make sense different. They impute meaning to others' actions and take their own actions in accord with the meaning interpretations they have made. In a similar vein, Hansen (2004) avows that the interpretive researchers are of the views that reality is constructed in the mind of the individual, rather than being an externally singular entity. Additionally, the purpose of any research study within the interpretive paradigm is to understand and interpret a specific context as it is, rather than to generalise or replicate the study (Schwandt, 2014).

Myers (2011) argues that the premise of interpretivists is that access to reality (whether given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. In another vein, Goldkuhl (2012) submit that the proponents of interpretive paradigm emphasise the goal of understanding the lived experiences from the point of view of those who live with it day to day. Additionally, the interpretive researchers seek to understand studied people through accessing the meanings that participants attached to those social worlds (Bryman & Bell, 2007). To be specific, interpretivism supported researchers in terms of exploring their world by interpreting the understanding of individuals (Thanh & Thanh, 2015).

Ontological assumption for the study

The concept 'ontology' used by social scientists was borrowed from philosophy. According to Ding and Foo (2001), ontology is the shared understanding of some domains of interest, which is often conceived as a set of classes (concepts), relations, functions, axioms and instances. Primarily, ontology means the theory of being (Dong, Li & Wang, 2006). Poetschke (2009) added that ontology is concerned with the question on how the world is built. Ontology focuses on what is the form and nature of reality, and what can be known about that reality (Morse, 2015). Blaikie (2000) give a brief definition of ontology as claims and assumptions that are made about the nature of social reality, claims about what exists, what it looks like, what units make it up and how these units interact with each other. In furtherance to the above, ontological assumption in any social science research is that the social world and what passes as 'reality' is a projection of individual consciousness; it is an act of creative imagination and of dubious intersubjective status.

According to Bryman (2001), reality is masked by those human processes which judge and interpret the phenomenon in consciousness prior to the full understanding of the structure of

the meaning it expresses. It was a result of position held by Bryman (2001) that Scotland (2012) argues that in a qualitative study a researcher need to take a position regarding their perceptions of how things really are and how things really work. Based on this notion, however, what constitute reality in a study is constructed in the mind of this researcher as it relates to the dynamics surrounding the people under study.

Epistemological assumption for the study

According to Cohen, Manion and Morrison (2011), epistemology focuses on the theory of knowledge. From Saunders, Lewis and Thornhill's (2007) perspective, epistemology dwells on what constitutes an acceptable knowledge in the field of study. In specific term, epistemological assumptions in social sciences focus on the knowledge-gathering process and ways of developing new models or theories which are better than rival models and theories (Scotland, 2012). The process in which knowledge is generated is continuously changing, never in a static or constant position. In light of the above, Wellington, Bathmaker, Hunt, McCulloch and Sikes (2005) argue that epistemological assumptions in any research are concerned with how researcher(s) knows, the nature of knowledge, what constitutes knowledge, where knowledge comes from and whose knowledge it is, and what it is possible to know and understand and represent. In qualitative research approach, the question that usually in mind of researchers are: how we know what we know or what is the nature of the relationship existing between the knower or would-be knower and what can be known. According to Creswell (2012), there are three types of research approaches used by researchers. Creswell (2012) listed the approaches to include: qualitative, quantitative and mixed methods. Unquestionably, these three approaches are not as discrete as it appears. Qualitative and quantitative approaches should not be seen as polar opposites or dichotomies. Rather, they represent different ends on a continuum. However, the main difference between quantitative and qualitative approach fall on the distinction between 'explanation' and 'understanding' as the focus of exploration (Huysamen, 2001).

While the characteristic of quantitative approach is the scientific search for 'cause and effect', on the other hand, qualitative approach is the search for an understanding of human experience (D'amant, 2009). In another development, mixed methods approach is an inquiry that seeks to combines or associates both qualitative and quantitative approaches (Creswell, 2012). Mixed methods approach is more than simply collecting and analysing both kinds of data, rather, it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research (Creswell & Plano-Clark, 2007). There are various ways in which qualitative researchers define qualitative approach. For example, Denzin and Lincoln (2000) define qualitative study as a broad class of empirical procedures designed to describe and interpret the experiences of research participants in a context-specific setting. Qualitative research is a means of exploring and understanding the meaning individuals or groups ascribe to a social or human problem.

Additionally, questions relating to 'why' and 'how' are generally pointed towards qualitative research (Flick, 2007). Furthermore, Denzin and Lincoln (2005) state that in qualitative research researchers attempt to reveal not only what happens but how it happens and, most importantly, why it happens and the way it does. Also, qualitative approach emphasises the lived experiences of the participants (Lichtman, 2006). In other words, the researcher tries to understand the world of the research participants and this can therefore be explained as

understanding the life experiences of the persons. Therefore, the central aim of qualitative researcher is to see the world from the perspective of the participants, and understand the phenomenon from the participants' experiences. Furthermore, in the qualitative approach process the researcher has a major role to play. According to Lichtman (2006, p.12), it is through the researcher's eyes and ears that data are collected, information is gathered, settings are viewed, and realities are constructed". However, detailed consideration is given to the holistic picture or situation of the study (Cohen, Manion & Morrison, 2011). Following a similar line of argument is Maree (2011), who says that qualitative research approach is aim at understanding a phenomenon by looking at the overall picture instead of focusing on it as isolated variables. Cohen, Manion and Morrison (2011) opines that the researcher can only interpret and bring meaning to the data collected if he or she is able to understand the data in a wider social, educational and historic context.

Case Study

Yin (2009) sees a case study as a research approach used in various situations to add to our knowledge and understanding of an individual, group, organisation, social, political and related phenomena. Saunders (2005) refers to a case study as an explanation or in-depth analysis of a "bounded system" (bound by time and/or place) or a single or multiple cases, over a period of time. In a similar vein, Swanborn (2010, p.13) defines a case study as a study of social phenomenon carried out within the boundaries of one social system (the case) or within the boundaries of a few social systems (the cases), such as people, organisations, groups, individuals, local communities or nation-states, in which the phenomenon to be studies enrolls. Drawing from the above conceptualisation, it would be out of place to say that a case study is as a detailed examination of a social phenomenon within specific context.

In the context of the application of a case study in the research, Yin (2009) comes up with three main reasons for the adoption of the case study in the study. Yin (2009) says that the use of 'how' or 'why' research question(s) that seek to explain the present circumstance justify the engagement of the case study. However, the more the research question necessitates an intensive and in-depth explanation of the phenomenon, the higher the appropriateness of the case study approach in the study (Swanborn, 2010). Additionally, Yin (2009) says that a case study is a preferred approach when the researcher has little control over the events related to the social phenomena. In the context of the third reason, Yin (2009) indicates that a case study focuses on a contemporary phenomenon within a real-life context.

Another merit of the case study approach is its potential to allow for the use of different approaches or methods to gather information. In line with the qualitative research methodology, a case study connotes a detailed and in-depth study of a case or cases. It was also observed that a case study is concerned with a rich and vivid description of events relevant to the case. Similarly, the case study analyses relations between the factors that describe present status or influence change or growth (VanWynsberghe & Khan, 2007). Bassey (2007) goes on to argue that a case study involves being where the action is, taking evidence from the research respondents.

Creswell (2007) recognises three variations in case studies that are linked to the intent of the case analysis. Creswell (2007) mention the single instrumental case study as the first variable in which the researcher looks at an issue and chooses a case. The position held by Creswell

(2007) was affirmed by McMillan and Schumacher (2006), Bassey (2007), who refers to it as multiple-site case studies. In another circumstance, Yin (2009) argue that the data gathered from multiple cases are often considered as being more convincing, and the study is thus understood as being more robust and rich. Furthermore, Yin (2009) opines that the analytical advantages of using multiple cases may be substantial. However, the criticisms regarding the use of a single case approach largely mirror uncertainties about the uniqueness or artificial conditions related to the case (Yin, 2009).

Notwithstanding the views of Creswell (2007) and Yin (2009), Swanborn (2010) says that the major challenge facing the use of the case study approach is its lack of representativeness of the wider population or community. Interestingly, the implication is that the findings cannot be generalised in other places of interest aside from the study area.

Conclusion

Several concepts that relate to research design have been discussed exhaustively in this review. Such components as: interpretive paradigm, ontological and epistemological considerations, qualitative and quantitative approaches to research findings. It is important to note that: Paradigm is a set of interrelated assumptions about the social world which provides a philosophical and conceptual framework for the organised study of the world. There are three research paradigms namely: positivism, post-positivism and interpretivism; ontological assumption in any social science research is that the social world and what passes as 'reality' is a projection of individual consciousness; Epistemological assumptions in any research are concerned with how researcher(s) knows, the nature of knowledge, what constitutes knowledge, where knowledge comes from and whose knowledge it is, and what it is possible to know, understand and re-present, as research is based on assumptions. And finally, the characteristic of quantitative approach which is the scientific search for 'cause and effect', while the qualitative approach is the search for an understanding of human experience and the main difference between quantitative and qualitative approach which fall on the distinction between 'explanation' and 'understanding' as the focus of exploration.

Recommendations

1. Researchers should know that either quantitative or qualitative researches are very important and recommended for use. They should note that the type of research is strongly dependent on the topic and the researcher's intention.
2. The use of case study recommended when the researcher has little control over the events related to the social phenomena.
3. Care must be taken with respect to the methods that will be employed in the research for use appropriate statistics in the analysis of data.

REFERENCES

- Asghar, J. (2013). Critical Paradigm: A preamble for novice researchers. *Life Science Journal*, 10(4), 3121-3127.
- Babbie, E. & Mouton, J. (2007). *The practice of social research*. Oxford: Oxford University Press.
- Bisman, J. (2012). Post-positivism and accounting research: A (personal) primer on critical realism. *Australasian Accounting, Business and Finance Journal*, 4(4), 3-25.
- Bryman, A. & Bell, E. (2007). *Business Research Methodology*. Oxford: Oxford University Press.
- Coe, R. (2012) *The nature of educational research*. In J. Authur, M. Waring, R, Coe & INITIAL? Hedges (Eds.). *Research methods and methodologies in Education*. Los Angeles: Sage.
- Cohen, L., Manion, L. & Morrison, K. (2011). *Research Methods in Education* (7th ed.). New York: Routledge.
- Cohen, L., Manion, L. & Morrison, K. (2011). *Research Methods in Education* (7th ed.). New York: Routledge.
- Creswell, J. W. (2012). *Educational research*. Planning, conducting, and evaluating quantitative and qualitative research.
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L. & Morales, A. (2007). *Qualitative research designs: Selection and implementation*. *The counseling psychologist*, 35(2), 236-264.
- Denzin, L. & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research*. London: Sage.
- Denzin, L. & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research*. London: Sage.
- Ding, Y. & Foo, S. (2001). Ontology research and development. Part 1-a review of ontology generation. *Journal of information science*, 28(2), 123-136.
- Flick, U. (2007). *Managing quality in qualitative research*. London: Sage.
- Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European journal of information systems*, 21(2), 135-146.
- Greene, J. C., Benjamin, L. & Goodyear, L. (2001). *The merits of mixing methods in evaluation*. *Evaluation*, 7(1), 25-44.
- Hancock, B., Ockleford, E. & Windridge, K. (2009). *An introduction to qualitative research*. Trent focus group.

- Healy, M. & Perry, C. (2000). Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm. *Qualitative market research: An international journal*, 3(3), 118-126.
- Krauss, S. E. (2005). *Research paradigms and meaning making: A primer*. The qualitative report, 10(4), 758-770.
- Lichtman, M. (2006). *Qualitative research: A user's guide*.
- Maree, K. (2011). *First Steps in Research*. Pretoria: Van Schaik Publishers.
- Morse, J. M. (2015). *Critical analysis of strategies for determining rigor in qualitative inquiry*. *Qualitative health research*, 25(9), 1212-1222.
- Myers, M. D. & Klein, H. K. (2011). *A set of principles for conducting critical research in information systems*. *MIS quarterly*, 17-36.
- Ponterotto, J. G. (2005). Qualitative research in Counseling psychology: A primer on research paradigms and philosophy of science. *Journal of counseling psychology*, 52(2), 126.
- Saunders, W. (2005). English language learners in US schools: An overview of research findings. *Journal of Education for Students Placed at Risk*, 10(4), 363-385.
- Saunders, W. (2005). English language learners in US schools: An overview of research findings. *Journal of Education for Students Placed at Risk*, 10(4), 363-385.
- Schwandt, T. A. (2014). *The Sage dictionary of qualitative inquiry*. Sage Publications.
- Scotland, J. (2012). *Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms*. *English Language Teaching*, 5(9), 9.
- Scott, D. & Morrison, M. (2006). *Key ideas in educational research*. London: A&C Black.
- Swanborn, P. (2010). *Case study research: What, why and how?* London: Sage.
- Thanh, N. & Thanh, T. (2015). The Interconnection Between Interpretivist Paradigm and Qualitative Methods in Education. *American Journal of Educational Science*, 1(2) 24-27.
- Van Wynsberghe, R. & Khan, S. (2007). Redefining case study. *International Journal of Qualitative Methods*, 6(2), 80-94.
- Wellington, J., Bathmaker, A.-M., Hunt, C., McCulloch, G. & Sikes, P. (2005) *Succeeding with your Doctorate*. London: Sage.
- Yin, R. K. (2009). Case study research: Design and methods (4th edition). In *United States: Library of Congress Cataloguing-in-Publication Data* (2).
- Zammito, J. H. (2004). *A nice derangement of epistemes: Post-positivism in the study of science from Quine to Latour*. Chicago: University of Chicago Press.