

ANALYSIS OF MAJOR RESEARCH APPROACHES IN SOCIAL SCIENCES

Ekong E. Daniel (Ph.D)

Faculty of Social and Management Sciences, Akwa Ibom State University, P.M.B. 1167,
Uyo, Obio Akpa Campus, Akwa Ibom State, Nigeria

ABSTRACT: *This paper discusses quantitative and qualitative research methods with relevant examples as the major research approaches in social sciences. It objectively analyses these research methods, highlighting their types, characteristics, strength and weaknesses. The paper concludes with summations that much can and have actually been achieved when researchers in the various fields of social sciences themselves use their ingenuity to determine carefully when to use them individually and when to use in combination.*

KEYWORDS: Social sciences, Research methods, Research approaches, Quantitative approach, Qualitative approach.

INTRODUCTION

Research is defined as a scholarly or scientific investigation or experimentation aimed at the discovery of facts (Enoh, 1997). It is based on the revision of accepted theories, premises, or laws in the light of new facts, or the practical application of such new or revised theories, premises or laws. Research then means to study, to seek out and seek again thoroughly or search again and take another more look to find our more. From the foregoing, it can be inferred that research attitude presumes that the first look, investigation or premises and even every later look, investigation or premises may be prone to error so that it becomes necessary to examine and re-examine, again and again in order to derive effective valid, reliable and practical solutions to societal problems. There are innumerable difficulties though faced by social scientists in their attempt to solve persisting social problems. The two major approaches often applied either in isolation or in combination to investigating social phenomena are Quantitative method and qualitative method. The following discussion evaluates objectively these two major research approaches.

Philosophical Perspectives

All research (whether quantitative or qualitative) is based on some underlying assumptions about what constitutes 'valid' research and which research methods are appropriate. In order to conduct and/ or evaluate qualitative research, it is therefore important to know what these (sometimes hidden) assumptions are. The most pertinent philosophical assumptions are those which relate to the underlying epistemology which guides the research. Epistemology refers to the assumptions about knowledge and how it can be obtained. Three examples are discussed below.

Positivist Research

Positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her

instruments. Positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena.

Interpretive Research

Interpretive researchers start out with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. The philosophical base of interpretative research is hermeneutics and phenomenology (Boland, 1985).

Critical Research

Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination. The main task of critical research is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Critical research focuses on the oppositions, conflicts and contradictions in contemporary society, and seeks to be emancipator, that is it should help to eliminate the cause of alienation and domination.

Just as there are various philosophical perspectives which can inform qualitative research, so there are various qualitative research methods. A research method is a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection. The choice of research method influences the way in which the researcher collects data. Specific research methods also imply different skills, assumptions and research practices

Quantitative Research Approach

Quantitative methods are extremely useful tools. Quantitative methods use available data to describe (model) what is observed. These models have many uses. They are used to help explain observation, to make predictions about future events, or to provide decision-makers with tools to test the impact of alternative solutions to problems. Analysis of a particular risk may require a series of models to describe various components, or steps, that impact on the risk. Typically, such a series of models is called Quantitative Risk Assessment.

Quantitative risk assessment and quantitative methods generally can be very powerful, but require a strong command of the science and art of probabilistic methods. The results of a model can be very sensitive, for example, to the choice of distributions. Using the wrong assumptions in a model can produce incorrect results. Incorrect results can lead to poor decisions, and to undesirable outcomes. However, the use of quantitative methods in research does not necessarily require in-depth knowledge of statistics, but an understanding of basic terminology is necessary. There are web-based resources that provide information about basic statistics.

Quantitative methodology

The quantitative analysis or science based methodology may also be referred to as the problem solving approach, for social sciences seek to identify real human problems and then

apply modern scientific method to derive effective solution to such problems. This must be done in a series of steps:

- I. Identification of problem: a very well explained problem statement must be made with very clear research objectives. Then the initial hypothesis for solving the problem will be formulated. This process involves translating language of the substantive human problem into probability language ready for testing.
- II. Relevant information (data) are then collected. This step, in planning, involves the definition of measurement, population and sampling procedures, bearing regards to the type of test to be utilized and the demands of such test.
- III. The raw data collected from the field will now be processed and put in a most appropriate useful form.
- IV. The data should now be analyzed and in the light of the statistical results obtained, the mathematical solution is obtained when the null hypothesis (H_0) is either accepted or rejected. From here, such mathematical inference will be translated into substantive solution.

Methods of Quantitative Assessment

Obtaining and using quantitative information which will lead to a thorough understanding of the impacts of an intervention may entail a carefully designed methodology covering the entire impact assessment exercise. This may include:

- i. Designing the overall review questions
- ii. Defining the key issues
- iii. Assessing the significance of different types of impact
- iv. Deciding when livelihood impacts do not need to be quantified
- v. Obtaining baseline data
- vi. Undertaking desk research
- vii. Data collection approaches and methods
- viii. Integrating impact monitoring into the intervention

Statistical Analysis of Quantitative Information

Some types of quantitative information speak for itself, such as when a stakeholder group shows a marked increase in incomes compared with a clearly comparable control group. In other cases fairly sophisticated statistical analysis may be necessary in order to draw any reliable conclusions. For example, there are rules for accepting or rejecting the null hypothesis and accepting or rejecting the alternate hypothesis. When the calculated value is greater than the table value, the null hypothesis (H_0) is accepted and the alternate hypothesis (H_1) is rejected. Examples of quantitative analysis techniques include the following:

- I. Multiple correlation analysis

- II. Multiple regression analysis
- III. Multiple classification analysis
- IV. Analysis of variance
- V. Analysis of covariance
- VI. Principle component analysis
- VII. Factor Analysis
- VIII. Cluster analysis
- IX. Linear discriminant analysis
- X. Linear correspondence analysis
- XI. Canonical correlation analysis

Characteristics of Quantitative Methodology

The quantitative method, otherwise known as science based methodology, has its main characteristics. They are as follows:

- (a) It is based on the use of mathematization since mathematics has its precision, is the only language of science.
- (b) The science based methodology places emphasis on the testing of hypotheses. The initial hypotheses would specify which and what data to collect from the field. The operational definitions of concepts and stochastic models used help to establish the relationships between variables.
- (c) Modelling: There are many functions which a model may perform in scientific investigation. Ackoff (1964) said that scientific models are utilized to accumulate and relate the knowledge we have about different aspects of reality. They are used to reveal reality and to serve as instruments for explaining the past and present, and for predicting and controlling the future.

Multivariate statistical analyses, for example, are less time consuming if appropriate computer based statistical analysis techniques such as Statistical Package for the Social Science (SPSS), are applied. Another area where computer is applicable is in word processing. Social science researchers are encouraged to make use of the wide opportunities offered by computer application.

Example of Quantitative Research

Afangide (2003) in his work titled “Relative Effectiveness of Four Teaching Approaches on Students’ Problem-solving Abilities in Secondary School Mathematics” referred by Udofia (2009), among other objectives set out to investigate the computational abilities of male and female students who were exposed to four different methods of teaching Mathematics – the Discovery method, the Advanced organization method, the Games method and the

Expository method (DAGE). The SPSS print out of the Multiple classification analysis (MCA) table is as presented in Table 1.

The Eta of 0.51 shows that there is average positive relationship between teaching method and the computational abilities of students. $\text{Eta}^2 (0.51^2) = 0.26$ shows that 26% of the variation in computational abilities of students is traced to the teaching methods used. For the teaching factor, the adjusted column indicates that the most effective method is the Games method (7.17) followed by Discovery method (4.64). The expository method and the Advanced organization method are the least effective. For the Gender factor, Eta^2 of 0.00 shows that there is no relationship between gender and the computational abilities of students, but it shows that female gender is more important in this relationship (0.03) than the male.

Generally, the MCA table has revealed that there is actually a significant difference in the computational abilities of students exposed to different teaching methods. However, gender effect did not show any significant influence on students' mathematical abilities irrespective of teaching method used. The R of 0.508 measures the overall relationship of teaching methods and gender with the computational abilities of students and shows an average positive relationship. The multiple R squared of 0.258 shows that 25.8% of the variation in computational ability adjusted post scores were accounted for by the combined effects of teaching methods and gender (Udofia, 2009).

Table 1: Multiple Classification Analysis of Computational Abilities of Male and Female Students exposed to different styles of Mathematics Teaching

Grand mean = 61.326	Grand mean = 61.326			
Variable	Category	No	Unadjusted deviation	Adjusted for covariate independent deviation beta
DAGE (Teaching Style)	Discovery	60	4.64	4.64
	Advanced org	57	-6.64	-6.54
	Games	65	7.17	7.17
	Expository	60	-6.19	-6.19
			Eta = 0.51	Beta = 0.51
Gender	Male	131	-0.01	-0.03
	Female	111	0.01	0.03
			Eta = 0.00	Beta = 0.00
Multiple R – squared				0.258
Multiple R				0.508

Source: (Udofia, 2013)

The Hazards of Quantitative Research Approach

The strength of modern science based approach does not however mean the method is perfect. Researchers must be aware of the hazards involved when using the method and take necessary precautions to reduce the effects on their research decision. Some of the hazards are discussed in this section of the paper.

In quantitative research technique, the researcher is faced with the risk of committing either Type 1 error or Type II error. When a researcher incorrectly reject the null hypothesis when

the observations come from a single universe, it means that Type I error has been committed. Chances are that when the researcher tries to reduce the level of Type I error, there is a corresponding increase in the probability of committing Type II error (not rejecting the null hypothesis, when observations do come from different populations). Researchers are cautious and they always prefer making Type II error rather than a Type I error. They prefer to incorrectly state that they found no differences than to incorrectly believe that differences were significant when they were not (Enoh, 1997). Other hazards include abnormality of data, measurement errors in variables, non-dependence of data, and non-randomness of data, heteroscedasticity, and auto-correlation. Others include non-linearity of the data, multi-collinearity (Udofia, 2010). Another danger today associated with undue attachment to quantitative approach in the social sciences is that scientists will pick problems, not because of their relative significance, but because data can be programmed for computers (Umoh, 1998). According to Umoh Social Scientists are to be careful not to under-rate qualitative approach by reducing their work to that of technicians. Inappropriate application of quantitative methods leads to misuse of them as revealed by Davcik, (2014).

The Qualitative Research Approach

Qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena. Examples of qualitative methods are action research, case study research and ethnography. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions.

The motivation for doing qualitative research, as opposed to quantitative research, comes from the observation that, if there is one thing which distinguishes humans from the natural world, it is our ability to talk! Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live. Kaplan and Maxwell (1994) argued that the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context is largely lost when textual data is quantified.

Although most researchers do either quantitative or qualitative research work, some researchers have suggested combining one or more research methods in the one study (called triangulation). Apart from qualitative /quantitative distinction, there are other distinctions which are commonly made. Research methods have variously been classified as objective versus subjective (Burrell and Morgan, 1979), as being concerned with the discovery of general laws (nomothetic) versus being concerned with the uniqueness of each particular situation (idiographic), as aimed at prediction and control versus aimed at explanation and understanding, as taking an outsider (etc) versus taking an insider (emic) perspective, and so on. Considerable controversy continues to surround the use of these terms; however, a discussion of these distinctions is beyond the scope of this paper.

Qualitative Research Methods

The use of qualitative methodology in the social sciences is informed by the demand for field work. A peculiar character of field work in the social sciences is that the scientist has to communicate with the objects studied and they with him. This is the important distinguishing point between the social sciences and natural sciences.

By qualitative method of analysis, problems are evaluated on the basis of approaches other than those employing statistics tools for analysis. The researcher merely observes what is happening to sample subjects, without making any effort to manipulate or control them. His report only reflects what he has seen and how he feels about it, from his own judgmental perspective. However, the general and the most important aspect of this method of analysis remains that no statistical or mathematical analysis is involved.

Characteristics of Qualitative Methodology

It is helpful to consider some characteristics of qualitative design. The following list is not meant to be exhaustive; it is offered merely as heuristic tool:

- vi. Qualitative design is holistic. It looks at the larger picture, the whole picture, and begins with a search for understanding of the whole.
- vii. It looks at relationships within a system or culture
- viii. Qualitative design refers to the personal, face to face, and immediate
- ix. It is focused on understanding a given social setting, not necessarily on making predictions about that setting
- x. It demands that the researcher stay in the setting over time.
- xi. It demands time in analysis equal to the time in the field.
- xii. It demands that the researcher develop a model of what occurred in the social setting.
- xiii. It requires the researcher to become the research instrument. This means the researcher must have the ability to observe behaviour and must sharpen the skills necessary for observation and face-to-face interview.
- xiv. Qualitative design incorporates informed consent decisions and is responsive to ethical concerns.
- xv. Qualitative design incorporates room for description of the role of the researcher as well as description of the researcher's own biases and ideological preference.
- xvi. Qualitative design requires ongoing analysis of the data.

The qualitative research approach in social sciences is uniquely useful in comparative research. Comparative research is usually classified into two – Cross – cultural and Cross-temporal comparative research. Both can be done using the qualitative approach.

Example of Qualitative Research

In a cross cultural qualitative study Ekpe, Ekpe and Daniel (2013) compared the Evolution and Structure of Local Government System in Nigeria and Liberia. The study noted that the Nigerian local government system under the auspices of the 1976 local government reform allows citizenry participation in the administration that has direct relevance to the rural populace, but the Liberian local government system does not. It noted why Olowade (1980) remarked that “one of the criticisms leveled against Liberian local government system is that it prevents the development of a local pride by the people in their local affairs. This is so

because the system in the local government arrangement does not encourage the people to provide for themselves certain essential services”.

Again, Liberia operates a unitary system of government with characteristic resemblance of both USA and British forms of constitutions. Like British constitution, Liberian constitution is unitary and rigid, and powers are concentrated in the hands of the president. This, coupled with the overriding supremacy of a one-party system (True Whig Party) makes other levels of government, regional and local subordinate to the central government. The Liberian True Whig Party exerts firm control over political and economic affairs of the entire country right from the national to the local level. All governmental units in Liberia are more or less cells of the party and they function in strict conformity with centrally planned programmes of the central government. The main responsibility of local government in Liberia according to the study is to carry out to the letter instructions of the central government and to implement the laws and programmes of the central government”.

The study observed that whereas both countries evolved their local government systems in fulfillment of the decentralization process, Nigeria adopted a single tier multi purpose structure, while Liberia adopted a three tier local government structure. The local government functionaries in Liberia are appointed by the president and they owe total loyalty and obligation to the president who has powers to either hire or fire them at will. In Nigeria, the local government officials are elected through popular election by the people in consonance with the provision of Section 14(2c) of the 1999 Constitution which recognizes the right of the people to participate in electoral process as well as other activities that concern them. The researchers said that the local government system in Liberia is embedded in the inherent ethnic divide that existed between the tribal Liberian people and the Americo Liberians. Thus, the modified system of indirect rule introduced at the instance of president Arthur Barclay did not only keep the tribal people divided into twenty or more districts, ethnic groupings, but provided the ruling True Whig party with rationale for excluding them from participation in the national life of the Liberian State.

Comparatively, the Liberian local government system exhibits the features of the socialist or communist system, where the local government, apart from functioning as cells of the ruling political party, is established for the purpose of managing the centrally planned programmes, and to run its public affairs. On the other hand, Nigerian local government system takes on the pattern of Anglo Saxon or British model which she inherited right from the colonial era. Under this system, the local government has relative autonomy in which the local councils can function at least as miniature governments in their own right”. The impression here is that, Nigerian local government system being a prototype of British system does not confer absolute autonomy on the local government, rather it is a relative or ‘guided’ form of autonomy, where the higher levels of government; Federal or State government have supervisory roles or duties to ensure that the services provided by the local authorities in the country are reasonably efficient, uniform and conformed with established policy framework of the national government. Viewed against the foregoing, it can, therefore, be concluded that, the Nigerian local government system belongs to the devolution category of decentralization and places a lot of premium on liberal democracy with the essence of facilitating local participation and mobilization of the grassroot people for developmental activities. This is not the case in Liberia, where there is absence of popular and participatory democracy, and election of local government’s representatives is done through appointment by the president.

The study concluded that the 1976 local government reform in Nigeria and the 1964 uniform local government reform in Liberia had engendered radical transformation in the respective local government systems. Though the two reforms were direct responses to certain and apparent similar problems, they were executed within different framework of a very different system. Nigeria operates a Federal system, while Liberia operates a unitary system; also both Nigeria and Liberia are developing nations. The study advocated that both Nigeria and Liberia should combine both federal and unitary elements inherent in their local political systems to structure their local government systems which will, better assure the realization of the desired roles of the local government systems in the two countries. Decentralization of power in both countries was also recommended, to give more powers and responsibilities to the local units which are the closest to the rural populace (Ekpe, Ekpe & Daniel, 2013).

Weakness of the Qualitative Research Methods

From the foregoing considerations, it is clear that qualitative methods appeal much to common sense, reason, intuition and unscientific authorities as the answer to human problems. We may regard commonsense as sound and prudent but often unsophisticated judgment. Often times commonsense solutions may be incorrect and unreliable.

Qualitative methodology looks for sufficient grounds of explanation or justification or of logical defense to convince that such explanation or conclusions are intelligible. But due to constant changes over places and time, qualitative conclusions cannot be applied at another place or time. It is also difficult to test theories put forward by qualitative methods because of the assumptions which often bind the principles. Therefore, it can be said that qualitative methodology lacks scientific theoretical base.

Computer Applications in Social Science Research

The traditional methods of representing results of research finding in social science and communicating same to others have been maps, tables, graphs and written report. Current advances in social science research look at the social world as a system. The system work together taking all elements; socio-economic, psychology, environment and their relationships together. Through computer application, it is possible to represent the social systems, both the elements and relationships as a dynamic picture of the environment and it is also possible to represent the maps, tables, graphs and written reports too, in a more dynamic form using computer machines.

CONCLUSION

It is an accepted part of modern belief that science and its research methods are of social value (Enoh, 1998). This is not, however to say that science is the only path to conventional wisdom, rather our day to day experiences do confirm that the gateway to human satisfaction and preservation is lined up with the discoveries and contributions of science

Nevertheless, the causes of effects can often be extremely difficult to identify reliably, whether by quantitative or qualitative techniques. In theory, the confidence limits which can be calculated by statistical analysis should show how reliable the findings are. In practice, undetected systematic errors in the data can far outweigh the known uncertainties. The findings can then have a semblance of scientific rigor which is totally unjustified. Meanwhile,

purely qualitative techniques can suffer from a high degree of subjectivity. A combination of different techniques is often necessary. As well as helping to explain the findings, inconsistencies revealed by 'triangulation' of the results from different assessment methods can help to identify systematic errors or false interpretations which would otherwise go undetected. Therefore, much can and have actually been achieved when researchers in the various fields of social sciences themselves use their ingenuity to determine carefully when to use them individually and when to use in combination.

REFERENCES

- Ackoff, R. L. (1964) General Systems Theory and System Research: Contrasting Conceptions of Systems Science. In: Mesarovic, M. D. (Ed) *Views on General Systems Theory*. New York: John Wiley & Sons. Pp. 21- 30.
- Boland, R. (1985) Qualitative Methods. Retrieved from [http:// www. qual.auckland .ac.nz/interp.htm#_Boland, R.](http://www.qual.auckland.ac.nz/interp.htm#_Boland, R.)
- Burrell and Morgan(1979) Qualitative Technique. Retrieved from [http:// www. qual.auckland .ac.nz/general.htm#_Burrell, G and Morgan, G.](http://www.qual.auckland.ac.nz/general.htm#_Burrell, G and Morgan, G.)
- Davcik, N. S. (2014). The Use and Misuse of Structural Equation Modeling In Management Research: A Review and Critique. *Journal of Advances in Management Research*, Vol. 11 Iss: 1, Abstract. Retrieved from <http://www.emeraldinsight.com/journals.htm?articleid=17104002>
- Duruzoechi, N. (2008) *Introduction to Urban Research Methods and Report Writing*. Owerri, Nigeria, Tropical Publishers.
- Ekop, O. B. (1998) Research Methods in Urban and Regional Planning. In: Modo, I. (Ed) *Orientation and Research Methods*. Cultural Research Publishers, University of Uyo, Nigeria. Pp. 213 -230.
- Ekpe, A., Ekpe, M. and Daniel, E. (2013). A Comparative Analysis of Evolution and Structure of Local Government Systems in Nigeria and Liberia. *Scientific Research Journal (SCIRJ)*, Vol. I, No IV: pp. 64-70. Retrieved from <http://www.scirj.org>
- Enoh, C. O. E. (1997). *An Introduction to Empirical Research in Social Sciences and the Humanities*. Uyo, MEF Nig. Ltd, Printex Press.
- Enoh, C. O. E. (1998) Science- Based Methodology: Its Relevance in Modern Geographical Thought and Research. In: Innocent Modo (Ed) *Orientation and Research Methods*. Cultural Research Publishers, University of Uyo, Nigeria. Pp 57 -65.
- Kaplan and Maxwell (1994) *Scientific Methods*. Retrieved from [http://www. qual.auckland .ac.nz/general.htm#_Kaplan, B. and Maxwell, J. A.](http://www.qual.auckland.ac.nz/general.htm#_Kaplan, B. and Maxwell, J. A.)
- Lewis, I. M. (1985) Quantification. Retrieved from [http:// www. qual.auckland .ac.nz/ethrets.htm#](http://www.qual.auckland.ac.nz/ethrets.htm#)
- Martin, P. Y. and Turner, B.A. (1996) Quantification. Retrieved from [http:// www. qual.auckland .ac.nz/grndrefs.htm#](http://www.qual.auckland.ac.nz/grndrefs.htm#)
- Udofia, E. P. (2013). *Fundamentals of Social Science Statistics*. Enugu, Nigeria Immaculate Pub. Ltd.
- Umoh, O. J. (1998) The Use of Qualitative Methods in Resaerch. In: Innocent Modo (Ed) *Orientation and Research Methods*. Cultural Research Publishers, University of Uyo, Nigeria. Pp. 84 -93.