



CHALLENGES AND PROSPECTS OF QUANTITATIVE RESEARCH IN SOCIAL SCIENCE

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ABSTRACT: *This paper discussed the relevance, challenges and prospects of quantitative research in Nigeria. Among other things, the strength of quantitative methods was discussed to include: objectivity, usage of larger sample, building protection against bias and not requiring relatively longer time for data collection. However, some limitations of quantitative research were equally highlighted, such as: lack of deeper meanings of phenomena, quantitative research not being in-depth, and also quantitative research overlooking test-takers and testers experiences. The paper concludes that the combination of both quantitative (positivism) and qualitative perspectives (constructivism) is paramount because both approaches represent different ends on a continuum and that such integrated approach leads to rich texture of interpretation of phenomena. It also recommended that scholars, particularly quantitative researchers should always expose themselves to diverse methodological training and examine the potential merits of integrating qualitative approach in their research to provide a comprehensive, complimentary, explanation of the phenomenon of interest.*

KEYWORDS: Quantitative, Qualitative, Positivism, Constructivism, Objectivism

INTRODUCTION

The need understands and to be aware of any phenomena is and will always be a part and parcel of humanity. After all, the science of humanities, having its roots from philosophy of the ancient Greeks, is all about pursuit of knowledge and truth in every aspect of human endeavor. A casual look at the course specification of undergraduates and post graduates in the Nigeria Universities shows that every semester of these years in the universities, students are exposed and trained in quantitative methodology. Although, there has been some comparative review on quantitative and qualitative methods of research by researchers like Toomela 2010, Mefoh 2014, Abdullahi et al 2012, Osborne 2010, Firestone 2014 among others, there is no clear reasons and evidence that the quantitative methods are more superior to the qualitative methods. At the moment, there has not been any known empirical and systematic based assessment of quantitative methodology in Nigeria. Accordingly, this paper aims to undertake an evaluation of quantitative research in social science.

Growth, development and sustenance of any human society depend largely on knowledge gotten from research which leads to scientific advancement (Zacchaeus, 2018). It is important to note that scientific knowledge is a product of consensus among scholars in a given discipline concerning the validity of the information provided by any researcher or group of researchers as the bases for explaining any phenomena of interest (Ojiji, 2015). Scholars undertaking any research are always concerned on some particular approaches to align



themselves to. There exist paradigm wars and fervent debate in which researchers belong to with arguments about the superiority of research methods. Research, being the systematic investigation and gathering of data to help answer questions about human behaviour and social processes, is the battle ground for all researchers to buttress their arguments and add to human knowledge. It comprises creative and systematic work undertaken to increase the stock of knowledge including knowledge of humans, culture and society, and the use of this stock of knowledge to develop new applications (Franscati Manual, 2015). This systematic investigation involves prospective plan that incorporates data collection, either quantitative or qualitative and data analysis to answer questions. Science of psychology or any other social science is based on an organised body of knowledge on its subject matter and to develop explanations for phenomenon within its domain, by leaning on a particular philosophical paradigm to study and understand such phenomenon. This is basically because all kinds of research are underpinned by certain philosophical orientations and requires the understanding of the fundamental philosophical assumptions which underpin research methods, methodologies and paradigms. Korner (1973) asserts that, a problem is often fully understood only after its solution has been found by some particular method. In undertaking any research, there are basically two philosophical theoretical orientation researchers lean on: positivism (quantitative) or qualitative (constructivism). These theoretical orientations are the ideas that influence any stage of the process of research. Philosophical issues relate to questions of epistemology, i.e. the appropriate foundation for the study of society and its manifestations (Bryman, 1984). This underscores that research is not only about what a phenomenon is, but how such phenomenon is studied. This paper aims at critically discussing the relevance, challenges and prospects of quantitative research in Nigeria along six themes.

The first theme will give an overview of philosophical background of quantitative approach; and the second discusses the relevance of quantitative research in contemporary Nigeria. Challenges and prospects of quantitative research will be the third and fourth themes respectively. Finally, conclusion will be made and recommendation drawn based on the review.

Philosophical Background and Overview of Quantitative Approach

All research paradigms underpin the research process which normally provides a solid framework for sound guiding structure and a range of acceptable tools that help the researcher to find answers to questions they have posed, or address a hypothesis they have posited (Umaru, 2013). This is because a problem is only fully understood when its solution is based on a particular philosophical orientation or context. According to Donaldson & Crowley (as cited by Northrup, 1992) “a discipline is characterised by a unique perspective, a distinct way of viewing all phenomena (p.154). Meaning philosophy of a profession serves as a guide for practice and research. Walliman (2011) asserts that history of research is closely bond up with the theoretical developments that were promoted by philosophers, key thinkers, and practitioners in social sciences. Various debates on knowledge of human beings and the society are deeply rooted in philosophical thoughts of people like Aristotle, Plato, Comte, Weber etc. These epistemological and theoretical perspectives depend on researchers’ discipline or subject matter which influences their choice of research technique in the long run.

It is noteworthy, that the key components of philosophy are: ‘ontology’ and ‘epistemology’. Ontology deals with the nature and philosophy of reality and the term epistemology meaning



philosophy of knowledge or how we come to know the reality (Garner, 1993). Epistemology studies the nature of knowledge and it involves questioning such as: is there truth or absolute truth? Is there one way or many ways of seeing something? In research, epistemology manifests itself in several views. Broadly speaking, there are two fundamental research perspectives, which are positivism and constructivism as early stated. Positivist paradigm typically assumes quantitative research/methodology and constructivism (phenomenological or interpretivism) assumes the qualitative approach. Positivism being the basic foundation of quantitative research is a term coined by Auguste Comte and it is based upon the view that science is the only foundation for true knowledge. Chilisa & Kawulich (2012) observed that positivism holds that, the methods, techniques and procedures used in the natural sciences offer the best framework for investigating the social world. In contrast to positivism, constructivism is based on multiple realities shaped by social, political, cultural, economic, race, gender and value positions.

Quantitative research orientation deals with scientific way of investigating phenomena that are amenable to empirical measurement and verification. By empirical measurement and verification, it means investigating variables that can be assigned figures or values and which can be empirically observed, measured and verified (Erinosho, Obasi & Maduekwe, 2002). Quantitative methodology deals with quantities and relationships between attributes. The quantitative investigators manipulate numbers that represent empirical facts in order to test hypotheses in quantitative method. The underlying assumption is that human behaviour and attitudes, can be measured using numbers which when subjected to statistical manipulation, reveal features of social life (Erinosho et al, 2002).

Quantitative research is an approach for testing objective theories by examining the relationship among variables. These variables in turn can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures. Those who engaged in this form of inquiry have assumptions about testing theories deductively, building protection against biases, controlling for alternatives explanations, and being able to generalise and replicate the findings. Positivist approach of collecting data, like survey for instance is assumed to offer positive proof and rely on data which is collected systematically and methodologically. By applying statistical techniques to these data, it leads to possibility of generalisation of such findings (Umaru, 2013).

The epistemological issue in quantitative methodology is rooted in the positivist tradition that assumes that there is a common objective reality across individuals that can be tested subject to scientific method. Erinosho et al (2002) pointed out that 'the positivist orientation emphasizes positive facts and aims at discovering laws using quantitative methods. Consequently, positivists contend that social science researchers should focus only on issues that can be observed, measured, and verified, and on testing theories that are verifiable. Positivism asserts that all truths can be verified and proven scientifically and can even be observed and measured. The position of positivism is also derived from realism in that there is an external world out there that needs to be studied. Here, researchers try to be objective in studying any phenomenon, by making sure they do not come in to contact with whatever they are studying as they do not want to disturb the environment. One of the primary goals is to make generalizations that are applicable in all instances (Walliman, 2011). Quantitative researchers normally develop an example of what they believe is a truth about a phenomenon (a theory), and they test the accuracy of the theory and the changes that need to be made. In planning a study, researchers need to think through the philosophical world view assumptions



that they bring to the study, the research design that is related to this worldview, and the specific methods or procedures of research that translate the practice and approach (Creswell, 2014)

Note worthy is that the two broad perspectives mentioned above have given rise to a third research approach called 'mixed design'. This third perspective helps buttress that both quantitative and qualitative approaches are not as discrete as they appear and should not be view as rigid, distinct, categorised, polar opposites or dichotomized. Instead, they represent different ends on a continuum (Newman & Benz, 1998). Some studies tend to be more quantitative than qualitative or vice versa. While mixed methods reside in the middle of this continuum because it incorporates elements of both quantitative and qualitative. Importantly is that no one paradigm or philosophical approach is 'correct', It is the researchers' choice to determine his/her paradigmic view and how that will inform their research design to best answer the question under study (Chilisa & Kawulich, 2012). How the researcher views what is real, what he/she knows, how he/she knows it, along with the theoretical perspective(s) the researcher has about the subject under study, the literature that is available on the subject under study, and even the researchers value system work together to help researchers select the paradigm most appropriate for a particular study (Chilisa & Kawulich, 2012).

Since quantitative methodology entails the collection of data in numbers with its assumption that there is a common objectivity reality across individuals by the senses, it also requires the analysis of such data by appropriate statistical tools (quantitative analysis). Taking note that positivism is all about discovering laws through organised method and deductive reasoning to discover and answer or solve any puzzle surrounding any phenomenon of interest.

Relevance of Quantitative Approach in Contemporary Research

Having provided an overview of the philosophical background of quantitative research, we now discuss the relevance of quantitative research.

Quantitative researchers exist in the exciting nexus where knowledge is created from raw data. Through the quantitative study of the human condition, researchers hope to gain insight into basic, fascinating questions that humans have pondered on for ages (Osborne, 2010). Quantitative researchers are optimist above all else that through systematic, rigorous study, they are able to gain insight into behaviour, psychological processes, and important outcomes that ultimately can benefit the world in general. Quantitative approach has several relevance which are discussed below.

Quantitative researchers in Nigeria particularly in psychology have played contributing roles by designing instruments to measure samples of behaviour. Mefoh (2014) observed that there is abundant evidence that standardised psychological test which are generally quantitative in nature have allow for strong predictive validity. They have used quantitative approach to develop tests to measure various aspects of human behaviour, such as intelligence, personality, adjustment and motivation and many more (Mefoh, 2014). He posits that such research results have helped the government to make informed decision particularly in conflict resolution and in solving specific human problems.

Quantitative research allows the researcher to measure and analyse data by establishing the relationship between the independent variable and dependant variable for clarity of the cause and effect relationship. This is advantageous because it makes the study's findings to be



objective. Researchers frequently make their measurements with standardised instruments in order to be as objective as possible, making them empirical because they are based on objectively quantifiable observations (Smith & Davis, 2003). Standardization takes the work beyond ambiguity and enhances communication among researchers. Because the procedures of the quantitative research and measurements are objective, the research gives room for comparism and can be repeated for confirmation of the original results. It is this confirmation that leads to the validity of the research findings.

The quantitative research findings are beneficial because they are likely to be generalized to a whole population or a sub-population because it involves the larger sample which is randomly selected to avoid biases (Carr, 1994). Besides sampling, data analysis is less time consuming as it uses statistical software nowadays such as SPSS (Connolly, 2007). Powers D and Powers A (2015), in their research on TOEIC tests, contented that the study sample reflects the larger proportion (2300) of TOEIC test –taking large population which helps making the study truth-worthy.

Quantitative research is important because it is used to populate statistics from a high-volume sample size to gain statistically valid results. Results can be reduced to a few numerical statistics and interpreted in few short statements. It generally incorporates a survey-based approach to gain feedback in relation to population ideas, opinions, knowledge and attitudes. Also, the methods in quantitative research if explained in detail are advantageous because they are generally easy to replicate and so have a high reliability. The relevancy of quantitative approach is buttressed in the fact that person and reality are separate; objectivity reality exists beyond the human mind; research methods are statistical and content analysis; validity-data truly measures reality; reliability-research results can be reproduced, research object has inherent qualities that exist independently of the researcher (Rahman, 2017)

In addition, to quantitative procedures being scientific, and open to public scrutiny and replications as stated above, errors and faulty reasoning that became apparent normally leads to change in an initial conclusion that was reached. For example, Smith & Davies (2003), as stated in Godwin,1999), observed that some early American psychologists (James McKeen Cattell) once believed that intelligence was directly related to the quality of one's nervous system; the better the nervous system, the higher the intelligence. To verify this predicted relation, Cattell attempted to demonstrate that college students with faster reaction times (therefore having better nervous systems) earned higher grades in college (had higher levels of intelligence). Unfortunately, his observations failed to support the predicted relation, and Cattell changed his views of intelligence and how to measure it (Smith & Davies, 2003).

Aligning with the above, (Cronbach, 1971) as cited in Firestone, 1987) said that because quantitative research typically employs experimental or correlational designs, it reduces error, bias, and other noise that keeps one from clearly perceiving social facts.

More so, no single term characterises experimental aspect of quantitative research better than 'control'. Quantitative scientists go to great lengths to make sure their conclusions accurately reflect the way nature operates. When researchers implement control by directly manipulating the factor that is the central focus of their research, it is then an experiment has been performed. Because most psychologists believe that their most valid knowledge is produced by conducting experiments.



Quantitative research is relevant because it is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. It is used to quantify attitudes, opinions, behaviours, and generalise results from a larger sample of population

Even though Chilisa & Kawulich (2012) position is an ongoing debate, she stated that, the relevance of quantitative perspective is firmly informed by realism, idealism and based on laws that are generalisable in governing the universe. To her, science is value free, objective and based on precise observation and measurement that is verifiable.

Summarily, the relevance of quantitative research includes generalisation, economical with time and funds, standardisation and taking research work beyond ambiguity. It also enhances communication among researchers as they carefully establish relationships between variables to establish cause and effect.

In this section, we discussed the relevance of the quantitative research. The question though is; are there challenges or limitations to this approach? This is the question the next theme will contemplate.

Challenges of Quantitative Research Approach

The history of positivism as portrayed by Comte (1830)1988) is that human knowledge search should lead to absolute truth or knowledge. However, this quest is metaphysical rather than scientific, and the characteristic of the scientific or positive state of mind is the recognition of the impossibility of obtaining absolute truth. This means Comte's positivist science was concerned only with establishing observable empirical relationships of laws between phenomena, and abandoned completely any attempt to explore or explain the inner workings of people or societies (Rolfe, 2013). It is about researchers identifying and to some extent controlling certain variables while observing and measuring the effects on others.

Abdullahi, Senekal, Zyl-Schalekamp Amzat & Saliman (2012) observed that social life and human actions are highly complex, multidimensional and embedded in meaning. Therefore, it is a great challenge to reduce social realities to numbers. The basic sense of curiosity to understand this complexity has cautiously laid the foundation for social science research (Marvasti, 2004:1). Trying to demystify and understand the complex nature of human society and human behaviour began with positivism which gave birth to the quantitative research perspective (Abdullahi, et al, 2012). This method of investigation holds that the goal of knowledge is simply to describe the phenomenon under investigation, the object of the study is observed independent of the observer, knowledge can only be verified through direct observations, data collected through figures or numbers and analysis should involve attachment of numerical values to social characteristics. These assumptions rooted in the 19th century philosophy of research have its limitations in understanding phenomena.

The above leads to the explanation that, experimental method advocates the study of behavior under completely controlled rigid conditions. Mangal (2006) observed that such conditions demand the creation of artificial situations or environment and the behaviour studied under these conditions may be or is usually different from spontaneous or natural behaviour. This level of control might not normally be in place in the real world thus leading to "laboratory results" as opposed to "real world results" (Babbie, 2010). This means experimental



quantitative method fails to study the behavior in naturalistic conditions as otherwise may be studied by qualitative technique.

Moreover, preset answers will not necessarily reflect how people really feel about a subject and in some cases, might just be the closest match to the preconceived hypothesis of the researcher (Babbie, 2010). Meaning the data might reflect the view of the researcher instead of that of the participants, leading to less detailed and elaborate accounts of human perspective and social realities. He observes that quantitative researchers take snapshots of a phenomenon; not in-depth, and overlook test-takers and testers experiences.

Another major challenge of the quantitative research is that it leaves out the common meanings of social phenomenon, the meaning of events is left out. It fails to ascertain deeper underlying meaning and explanation (Rahman, 2017). He argued that the quantitative approach does not elicit deeper insight into designing, administering, and interpreting assessment and testing; and exploring test-takers behaviour, perceptions, feelings and understanding.

Thirdly, quantitative research or the positivist perspective cannot account for how the social reality is shaped and maintained, or how people interpret their actions and others (Blaikie, 2007). In a quantitative language testing research, it is found that the studies just investigate and estimate language skills, proficiency, scoring, and so on. A study undertaken by Katzenberger and Meilijson (2014) on the assessment of Hebrew language for preschool children in which it is to find out the language-impaired Hebrew-speaking pre-school children, and to identify whether the test can distinguish the development of and language-impaired children. However, the study did not explore why some children develop their language learning and why others are impaired. That is to say, the study left out the reality and the children's understanding of learning capacity of Hebrew language.

Fourthly, the quantitative research paradigm overlooks the respondents' experiences and perspectives in highly controlled settings (Ary, Jacobs, Sorensen & Walker, 2013) because there lacks a direct connection between researchers and participants when collecting data. As a result, the data obtaining method becomes objective. The study of Gu (2015) engaged 498 participants in the study of language ability test by distributing test-lets. This shows that the study has been unable to elicit the participants' perceptions as the researchers had no connection with them; just handing out the test-lets.

The narrative of strict positivism is that research with human beings can hardly take an impartial view of others, so researchers cannot establish 'facts' as fixed eternal truths. Researchers can only aim for interpretation and understanding of the social world (Walliman, 2011). Although quantitative research is more efficient and able to test hypotheses, it may ignore or miss contextual details. Quantitative research does not study phenomena in natural setting or discuss the meaning things have for different people as qualitative research does. This is because it uses a static and rigid approach and so employs inflexible process of discovery.

Another challenge of the quantitative approach is that it can provide narrow, unrealistic information using measures which capture only a tiny proportion of the concept originally under study. This can raise question about validity – did the research actually measure what the research claims it does?



The development of standard questions by the researcher can lead to ‘structural bias’ and false representation, where the data actually reflects the view of the researcher instead of the participating participant. This is because findings may provide less detail on behavior, attitudes and motivation of the participants and can be biased by researcher’s perspective. Sherman & Webb (1988) opined that quantitative research is indirect and abstract, treating people’s experiences as similar, adding or multiplying them together or quantifying them thereby losing the actual meanings of the phenomena.

Another challenge is that a large sample of a population must be studied; because for quantitative approach, the larger the sample size, the more statistically accurate the results will be. This can be time consuming and expensive leading researchers to falsification of data if for any reason they cannot reach such large population. It is pertinent to note that apart from phobia for figures and numbers by some researchers, issue of adaptability by researchers in reducing social realities to numerical does not give room for detailed study of phenomenon.

Prospects of Quantitative Research in Nigeria

With the understanding of the challenges and limitations of quantitative research, what are then the prospects of this research approach?

The part to the future is unknowable and rarely clear and easy. But even with the challenges faced by quantitative researchers leading to the need to expand quantitative training doctoral programs in quantitative research methods and even students interested in specializing in those methods are declining in numbers (Osborne, 2010). For example, the American Psychological Association Task Force on quantitative Psychology reported 23 Quantitative Psychology doctoral programs in North America, each with a handful or fewer faculty, and many with unused capacity to train more students than they had qualified applicants (Osborne, 2010). At a time when quantitative researchers have the power to leverage tremendous amounts of data to answer important questions, why does there seem to be a lack of interest in specializing in this discipline? Is it possible that because our tools are so easy to use, with point-and-click interfaces, that there is now a perception that students do not need as much training in quantitative methods? Of course, the reverse is true. The more sophisticated the software has become; the more training quantitative researchers need to make informed choices about what they are doing and ensure appropriate interpretation of results. With quantitative research approach, more and more sophisticated and increasing options for analysis of data might become increasingly at risk for making errors of inference if issues like data quality is not attended to (Osborne, 2010). He also pointed out that software can be seductive in that we can immediately begin clicking and analysing data without realising that our results might be substantially biased or invalidated by poor data quality.

It is important to note that researchers adopting the quantitative, hypothesis-driven research using positivist methods tend to adopt a view of the qualitative, inductive and interpretive approaches with some skepticism, or even overt prejudice (Pickering, 1993). Hagger & Chatzisarantis (2011) observed that such opinions are born out of ignorance rather than a genuine aversion to a particular perspective or methodological approach. They arrived at this by the consequence of their experiencing close contact with qualitative research and researchers and in doing so, developing a greater understanding of what qualitative research entails and its distinctions with quantitative designs.



With the vehement debate among quantitative and qualitative research paradigms, leading to great divide between quantitative and qualitative researchers who always view themselves as in competition with each other, it leads graduate students and researchers with aspiration for research to be left with the impression that they have to pledge to one school of thought (Onwuegbuzie & Leech,2005).Most importantly, these researchers are led to believe in incompatibility thesis(Howe,1988), which posits that quantitative and qualitative research paradigms and methodology cannot be mixed. Onwuegbuzie & Leech (2005) observed that mono method research is the biggest threat to the advancement of the social research because it undermines the beauty of the strength of both paradigms. To them, the debate is counterproductive for advancing the social and behavioral science field.

Though quantitative and qualitative research approaches lend themselves to different kinds of rhetoric, yet they are not antithetical. They present the reader with different kinds of information and can be used to triangulate to gain greater confidence in one's conclusions. When both approaches are used to focus on the same issue, which is by triangulating, and usage of different methods to assess the robustness or stability of the findings which makes the finding more credible. But when the results are in the contrary, it then calls for more research in such area.

Hagger & Chatzisarantis (2011) suggests that 'rather than focusing on the typical distinctions between quantitative and qualitative research, there is perhaps need to revise our focus and talk of the distinction between, for example, experimental science and interpretive science and indicate that quantitative and qualitative research can be integrated such that one approach compliments and augment the other'.

Having examined the philosophical foundation, relevance, challenges of quantitative research, we now draw some conclusion concerning quantitative methodology.

CONCLUSION

Generally, research is understood to follow a certain structural process, though steps order may vary depending on the subject matter and the researcher's philosophical inclination, but all research perspectives have their place in understanding any phenomena.

The two major research perspectives have given rise to the mixed design exposing that these approaches are not as discrete as they appear and should not be viewed as such. Instead they should be seen as representing different ends on a continuum. While the quantitative research approach involves usage of scientific or mathematical data to understand a problem, qualitative approach comes with a contextual social methodology.e.g., interviewing people.

In all scientific research, there will always be interplay between inductive inference (based on observation) and deductive inference (based on theory) until we get closer and closer to the truth which can only be approached but not ascertain with complete certainty.



RECOMMENDATIONS

Having examined the relevance, challenges and prospects of quantitative research in Nigeria, the following recommendations are hereby made to check the weaknesses and limitations of quantitative research.

1. It is recommended that though quantitative and qualitative research approaches have their differences, researchers must be open to both approaches because often, a combination of the two approaches is used to solve a problem, taking advantage of each approach' strengths. Quantitative researchers should therefore always examine the potential merits of integrating qualitative approaches in their research to provide a complimentary, comprehensive explanation of the phenomenon of interest.
2. Data quality should be given serious attention to help achieve factual research findings to promote public policies and earn public trust and confidence.
3. Researchers should embrace triangulation to enhance more comprehensive description of the social phenomenon and achieve an in-depth understanding of the subjects under investigation. Triangulation helps check the validity and clarify difference of opinion about the phenomena by gaining more understanding from different perspectives of an investigated phenomenon. It also increases and strengthens the researcher's standpoint from various aspects.
4. There should be advocacy of multi-method approach for deeper insight into the process and mechanisms that underpin human behavior, in doing so, advance thinking and knowledge will be gotten.
5. Quantitative researchers are also encouraged to do a bit of research on other philosophical perspectives. This is to avoid the dangers of adherence to a single theoretical or methodological approach which is dogmatic, and frequently, born of prejudice and lack of understanding, and its detrimental to understanding and developing unique and new perspectives on behavioral sciences.
6. Quantitative researchers should have open system of thoughts and should conscientise upcoming researchers never to think one research perspective has the answer to all questions of knowledge or one is better than the other. This underscores the need for researchers to familiarize themselves with both research perspectives to gain the rich texture of interpretation that an integrated approach avail.
7. Quantitative researchers should examine data critically and specify the limits of their generalizations with their research findings.

REFERENCES

- Abdullahi, A.A., Senekal, A., Zyl-Schalekamp, C. V., Amzat, J., & Salisman (2012). Contemporary Discourse in qualitative research: Lessons for health research in Nigeria. *Contemporary Discourse in qualitative research*. Pg 19-31. Retrieved March 21, 2018.



- Ary, D., Jacobs, L., Sorensen, C., & Walker, D. (2013). *Introduction to research in education*. Cengage learning.
- Babbie, E.R (2010). *The basics of social research* (12th ed.). Belmont, CA:Wadsworth Cengage.
- Blaikie, N. (2007). *Approaches to social enquiry* (2nd ed.). Cambridge: Polity Press.
- Bryman, A. (1984). The debate about Quantitative and Qualitative research: A question of Method or Epistemology? *The British Journal of Sociology*, 35 (1), 75-92
- Carr, L.T. (1994). The strengths and weaknesses of quantitative and qualitative research: what Method for nursing? *Journal of advance nursing*, 20(4), 716-721.
<http://dx.doi.org/10.104 a/j.1365-2648.1994.20040716.x>
- Chilisa, B., & Kawulich, B. (2012). Selecting a research approach: paradigm, methodology and methods. University of Georgia. Retrieved from <https://www.researchgate.net/publication/257944787>
- Connolly, P. (2007). *Quantitative and data analysis in education: A critical introduction using SPSS*. London and New York, NY: Routledge.
- Creswell. J. W (2014), The selection of research approach in Creswell. W. research design: Quantitative, qualitative and mixed design methods approach: SAGE.pg3-23
- Cronbach, L.J. (1975). Beyond the two disciplines of scientific psychology. *American psychologist*, 30,116-127
- Erinosh, L; Obasi, I. N & Maduekwe A. (2002). Interdisciplinary methodologies in the social sciences. UNESCO Abuja-social science academy of Nigeria. AUSCON FIRESEED & CO.LTD. Garki, Abuja.
- Firestone, W.A. (1987). Meaning in method: The rhetoric of quantitative and qualitative research. *Research gate, Educational research*. Retrieved 21st April, 2018 from <https://www.researchgate.net/publication/250182309>
- Franscati Manual, (2015). Guidelines for collecting and reporting data on research and experimental development. Technological and innovation activities, OECD Publishing, Paris. Retrieved on 27th January, 2018 from www.oecd.library.org
- Godwin, C.J. (1999). *A history of modern psychology*. New York: Willey.
- Gu, L. (2015). Language ability of young English language learners: Definition, Configuration, and implication. *Language testing*, 32(1), 21-38.
<http://dx.doi.org/10.1177/02655322145426>.
- Hagger, M.S., & Chatzisarantis,N.L.D.(2011). Never the twain shall meet? Quantitative Psychological researchers' perspectives on qualitative research. *Qualitative research in Sports, Exercise and Heath*, 3:3,266-277, DOI: [10.1080/2159676X.2011.607185](https://doi.org/10.1080/2159676X.2011.607185)
- Howe, K. R. (1988). Getting over the quantitative-qualitative incompatibility_thesis or dogmas die hard. *Educational researcher*, 17,10-16.
- Katzenberger,L., & Meilijson, S. (2014). Hebrew language assessment measure for preschool Children: A comparison between typically developing children and children with specific Language impairment. *Language testing*, 31(1), 19-38.
<http://dx.doi.org/10.1177/0265532 213491961>
- Kawulich,B(2012). Selecting a research approach: paradigm, methodology and methods. University of Georgia. Retrieved on April 2, 2018 from <https://www.researchgate.net/publication/257944787>
- Korner, S (1973). *Fundamental questions of philosophy*. Penguin books Ltd, Harmondsworth, England.
- Mangal, S. K. (2006). *An introduction to psychology*. (4th. Ed). Sterling publishers private Limited.



- Marvasti, A. B.(2004). *Quantitative research in sociology*. Retrieved April 5th, 2018 from <https://books.google.com.ng>
- Mefoh, P.C (2014). Challenges and prospects of psychology in Nigeria. *European Journal of social sciences*. 42(1), 56-64.
- Newman, I.& Benz, C.R.(1998): *Qualitative-quantitative research methodology: Exploring the interactive continuum*, Carbondale and Edwardsville: Southern Illinois University Press.
- Ojiji, O. O (2015). Fifty years of psychology in Nigeria: Are we still teaching science or folktales? *African journal for the psychological study of social issues*, 18 (20), 99-110.
- Onwuegbuzie, A. J., & Leec, N.L. (2005). On becoming a pragmatic researcher: the importance of combining quantitative and qualitative research methodologies. *International journal of social research methodology*, 8:5,375-387, DOI: 10.1080/13645570500402447.
- Osborne, J. W. (2010). Challenges of quantitative psychology and measurement in the 21st Century. *Frontiers in psychology*. Retrieved April 4, /2018 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3153733>.
- Pickering, M., (1993) *Auguste Comte: an intellectual biography*. Cambridge: Cambridge University Press.
- Powers, D. E., & Powers, A. (20015). The incremental contribution of TOEIC. Reading, Speaking, and writing tests to predict performance on real life English language tasks *Language testing*, 32(2), 151-167.<http://dx.doi.org/10.1177/0265532214551855>
- Rahman, M.S (2017). The advantages and disadvantages of using qualitative and quantitative Approaches and methods in language testing and assessment research: a literature review. *Journal of education and learning*, 6(1)
- Rolfe, G. (2013). *Quantitative Health Research: issues and methods*. Open University Press London.
- Sherman, R. & Webb, R.(1988). *Quantitative research in Education. Forms and methods*. Lewes: Farmer Press.
- Smith, R.A.& Davies S.F(2003). The psychologist as a detective: an introduction to conducting Research in psychology (3rd.ed). Upper saddle river, New Jersey.
- Toomela, A.(2010). Quantitative methods in psychology: inevitable and useless. *Frontiers in psychology. Hypothesis and test article*, 1(29), 1-14.
- Umaru, I. G. (2013). *Research methodology in social and behavioral science* (2. ed). Skywards Production.
- Walliman, N. (2011). *Social research methods*. SAGE publications Ltd. London ECIT ISP.
- Zacchaeus, E. A (2018). Checking ethical misconducts and questionable research practices among Nigerian research psychologists. *Unpublished seminar paper presented at the department of psychology, Nasarawa State Unuversity, Keffi*.