African Journal of Administration and Governance
Volume 1, Number 1, December 2023: 1-14
ISSN: 3043 - 5951

VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS IN PUBLIC ADMINISTRATION

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Abstract

Validity in social research means the extent to which the data is plausible, credible and trustworthy; and thus can be defended when challenged. Reliability and validity remain appropriate concepts for attaining rigor in both qualitative and quantitative research. Few or not many researchers in public administration always salvage responsibility for reliability and validity by implementing verification strategies integral and self-correcting during the conduct of inquiry which promote the attainment of rigor using strategies inherent within each quantitative and qualitative design, and moves the responsibility for incorporating and maintaining reliability and validity from external reviewers' judgments to the investigators themselves. This paper clarifies the meaning and use of reliability and validity in both quantitative and qualitative research paradigm in public administration. The paper also contributes to knowledge creation on how meeting validity and reliability demand of research affects its outcome and acceptability. In pursuit of this aim the paper relied on qualitative technique as its methodology. Threatening or risk factors that may affect validity and reliability of research outcomes were appraised. However, the research paper revealed that the trustworthiness, universality, acceptability of any research findings in public administration lies in the researcher's capacity to meet the validity and reliability need of the research exercise as any data collected with invalid or unreliable instrument eventually renders the research outcome unacceptable. The paper concludes by recommending some possible strategies to enhance validity and reliability in public administration (social research).

Keywords*:* Research instrument, Validity, Reliability, Quantitative research, Qualitative research

Introduction

Public Administration, in Dwight Waldo's terms, has become a profession. With that achievement, examining the methodological infrastructure of the profession is merited. Every profession rests on an infrastructure of research and research methods on which the profession's practitioners base their day-to-day activities. Contemporary public administration should be understood as a practical activity to achieve national and regional goals and objectives through state organizations and public participation. This definition allow to accumulate both domestic and foreign experience, as well as combine practice-oriented and research characteristics of the concept under study. The theoretical

basis of public administration is determined by two key methodological approaches: socio-engineering that is focused on the search for optimal management models for solving problems that arise in society in a way; and humanitarian, that is based on the need to overcome bureaucracy and inertia of the management system.

The subject of contemporary public administration consists of some problem areas, including: international, national, regional and local public administration systems; organization and implementation of sectoral policies, strategies, projects and programs; administrative processes and procedures; research of the state and municipal service; civil society; information support and digital transformation of administration.

In the subject field of Public Administration, knowledge is not only necessary for the understanding of government institutions and processes, but necessitates continuous research to create and manage new knowledge. Institutions of higher learning as custodians to generate new knowledge, transfer this knowledge and apply the knowledge to play a meaningful role in the enhancement of the knowledge society and the development of communities. However, research is a scientific knowledge creation process. Knowledge creation is the hub of every research effort in the field of public administration. This position was well articulated in Akuezuilo (1993) who posits that research is a systematic and objective search for new knowledge of the subject of study and for application of knowledge to the solution of a novel problem. Therefore research in the field of public administration is the process of arriving at dependable solutions to problems through the planned and systematic collection, analysis and interpretation of data. Research has a special role in a practitioner-orientated field such as public administration by serving not only to guide needed theory development but also to influence the practices and even the decisions of managers and policy-makers.

As an academic field, public administration is obligated to advance theoretical and pragmatic understanding of governmental institutions and processes. Such understanding, however, cannot be advanced solely by the explication of current knowledge through education and service; it also requires the generation of new knowledge through research (Liebman 1963). Research has a special role in a practitioner-orientated field such as public administration by serving not only to guide needed theory development but also to influence the practices and even the decisions of managers and policy-makers. Unfortunately, the research questions important to public administration do not lend themselves to scientific study in the same way found in the natural sciences. Rather, the important issues facing public administration and management are complex and involve phenomena not easily identified, isolated, manipulated, or even directly observed. Consequently, the generation of new knowledge in public administration is a difficult and tenuous process. A good question is not enough; good answers are needed (Wright *et al.* 2004).

To provide good answers, scholars must not only determine what should be the focus of research but also what data, instruments and methodology would be most helpful in answering the field's questions. At issue is not the respective legitimacy of qualitative or quantitative methods; rather, it should be about how valid and reliable to apply such methods in ways that build confidence in research findings.

Public administration differs from other fields and professions in that it lacks a set of core data sets that comprise the basic data infrastructure for the field. Political scientists have the National Election Studies, the Correlates of War, easily obtained congressional and state legislative data sets; economists have the Citicorp data set with its national time series, data from the Bureau of Labor Statistics; demographers and sociologists have the Panel Study on Income Dynamics. First, teaching research in public administration is more difficult simply because students do not have ready access to data sets concerned with management and administrative questions. In the social sciences, first semester graduate students can conduct actual research projects by just using data that can easily be accessed through the archives at the University or similar places. Second, students of public administration lack a common exposure to sets of data that would provide a notion of what core research questions might be. The result is less interaction among researchers and, thus, greater

difficulty in generating a cumulative body of research. Unlike other social scientists, public administration scholars are not trapped by data sets and funneled into studying only certain questions. How the National Election Studies have structured what is considered political science is a classic case of path dependence in this regard. The absence of core data sets means that public administration scholars expect to gather their own data and, thus, are more sensitive to issues of measurement of reliability and validity. The absence has also contributed to more eclectic use of data sets including government documents, elite interviews, archival research, and the merger of multiple data sources in addition to survey research.

Reliability and validity are related to each other. The relationship between these two is better understood with an example. We know that reliability refers to consistency while validity deals with measurement of the intended property. If a shopkeeper's weighing machine measures 950 grams of sugar every time customers buy 1 kg of sugar, then the weighing machine is said to be reliable. As the weighing machine weighs consistently in repeated operations, the machine is said to be reliable. However, there is a problem of error in measurement. Thus, what is important to note is that reliability tests consider the repeatability and consistency of a scale or an instrument. It does not tell whether there is an error in measurement. In other words, reliability tests don't test whether the instrument is measuring what it is intended to measure.

For the purpose of knowing whether the instrument (or it could be a scale, research design, research findings, etc.) is measuring what it is intended to measure, we use validity tests. It can be explained using the same example. If the shopkeeper's weighing machine weighs 1000 grams for every 1 kg then it is said to be valid. If the weighing machine weighs 1000 grams for 1 kg of sugar every time (repeatedly), then the weighing machine of the shop keeper is said to be valid and reliable. If the instruments used in data collection measure what is intended in repeated usage then the instrument is said to be reliable and valid.

The Nigerian civil service and other public organizations are confronted with diverse phenomenal problems which require systematically organized process of establishing a universal knowledge as to what causes those problems and how they could be deciphered. Example, effects of corrupt practice by public official on national development. The processes involve in arriving at germane and objective solution to societal problem requires rigorous mental and physical effort; empirical and theoretical frameworks needed to be established, undertaken a pilot survey as well as sampling opinion, analyzing data collected with a valid and reliable instrument with an eventual findings or conclusion.

The acceptability of any research outcome in the field of public administration is primarily dependent on the researcher's ability to fulfill the validity and reliability demand in the research enquiry. As social scientist, few and not many researchers are able to understand the usefulness of the data they collect: How accurate a pictureof social life they are getting; Whether or not the conclusions they draw are applicable to everyone or simply the group of people they have studied. Can our research be repeatedby others (a process known as replication and would they get similar results if they did repeat our research? One of the most important concerns of research in public administration has been the issue of reliability and validity. It has been a challenge to many researchers to claim the findings of their study as scientific as that of natural sciences.

Public administration, because of its very nature of object of study, i.e. social phenomena, which is dynamic, fluidic, and difficult to predict, suffers from the inability of developing instruments to help researchers to make precise, accurate claims of knowledge. It is known to us that knowledge claims in social research are the plausible explanations. Hence, a social science researcher faces the challenging task of arriving at reliable and valid data and conclusions. The most challenging questions in this paper are: What are validity and reliability tests in public administration research? What are the factors that determine the reliability and validity of a test in both qualitative and quantitative research? What is the relevance of validity and reliability tests in public administration research? How to enhance validity and reliability in qualitative and quantitative research in public administration?

It is against this background that this paper seeks toattuned researchers with multiple factors that pose risks to the validity of findings; plan and implement various tactics or strategies into each stage of the research project to avoid or weaken these threatening factors which affect the reliability and validity of data they collect. Hence, Validity and reliability are very important major aspects of every research exercise. Scrupulous concentration on these two aspects can make the difference between good research and poor research and can help to assure that fellow researchers accept findings as credible and trustworthy.

Conceptual Clarifications

When an instrument of data collection used by the researcher yields a particular set of data, another researcher should be able to derive similar data using the same instrument. Or, the same researcher should be able to derive similar data using the same instrument at another point of time. This refers to the notion called repeatability and consistency which is closely associated with reliability. Such repeatability and consistency may be possible with the instruments to a greatest extent in natural sciences. But, in social science research, there are inherent limitations and it is difficult to talk about reliability in the same sense we talk about it in natural sciences. However, over a period, there has been a steady advancement of tests which qualify the reliability of certain instruments like questionnaire or interview schedule used social research.

Reliability in general sense refers to consistency or repeatability of results with the instrument used in data collection, methodology adopted in the study and research design. 'Reliability is the degree to which a variable or test yields the same results when administered to the same people, under the same circumstances' (Weller 1998). Joppe (2000) defines reliability as the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is reliable. Reliability concerns the extent to which a measurement of a phenomenon provides stable and consist result (Carmines and Zeller, 1979). Reliability is also concerned with repeatability. For example, a scale or test is said to be reliable if repeat measurement made by it under constant conditions will give the same result (Moser and Kalton, 1989).

In the same vein, Reliability is concerned with the consistency, stability and repeatability of the informant's accounts as well as the investigators' ability to collect and record information accurately (Brink 1993). This, imply that, Reliability refers to the ability of a research method to yield consistently the same results over repeated testing periods. Gay (1987) opined that reliability is the degree to which a test consistently measures whatever it measures.The term 'Reliability' is a concept used for testing or evaluating quantitative research, the idea is most often used in all kinds of research. The idea of testing in qualitative paradigm is viewed as a way of information elicitation. Therefore most important test of any qualitative study is its quality. A good qualitative study can help us to "understand a situation that would otherwise be enigmatic or confusing" (Eisner, 1991).

Stenbacka, (2001) viewed reliability as purpose of explaining in quantitative approach and generating understanding in qualitative approach to research. The difference in purposes of evaluating the quality of studies in quantitative and qualitative research is one of the reasons that the concept of reliability is irrelevant in qualitative research. According to Stenbacka, (2001) the concept of reliability is even misleading in qualitative research, if a qualitative study is discussed with reliability as a criterion; the consequence is rather that the study is no good. Meanwhile, Patton (2001) puts three questions for the credibility (validity and reliability) of the qualitative research: What techniques and methods were used to ensure the integrity, validity and accuracy of the findings? What does the researcher bring to the study in terms of experience and qualification? And What assumptions undergirds the study? These questions may be used as guide for writing up narrative.
The most suitable terms in qualitative paradigms are Credibility, Neutrality or Conformability, Consistency or Dependability and Applicability or Transferability (Lincoln &Guba, 1985). To be more specific with the term of reliability in qualitative research, Lincoln and Guba (1985) used

“dependability”, in qualitative research which closely corresponds to the notion of “reliability” in quantitative research. They further emphasize “inquiry audit” as one measure which might enhance the dependability of qualitative research.

In the same layer, Clont (1992) and Seale (1999) endorse the concept of dependability with the concept of consistency or reliability in qualitative research. The consistency of data will be achieved when the steps of the research are verified through examination of such items as raw data, data reduction products, and process notes (Campbell, 1996).

From these multiple definitions, we can opine that Data reliability, therefore, is concerned with ideas such as: The consistency of the data collected. Will, for example, the same question asked of the same person in similarcircumstances, produce the same answer?; The precision (or lack of same) with which it is collected, for example, how systematic is a form of data collection that relies upon asking people questions about something about what they may have little direct knowledge; The repeatability of the data collection method, for example, if another researcher attempted to repeat my research "down the public, would similar results be achieved?

In the same direction, validity is the extent to which a test measures what it is supposed to measure. The question of validity is raised in the context of the three points made bellow: the form of the test, the purpose of the test and the population for whom it is intended. Therefore, we cannot ask the general question “Is this a valid test? The question to ask is “how valid is this test for the decision that I need to make?” or “how valid is the interpretation I propose for the test?” We can divide the types of validity into logical and empirical.

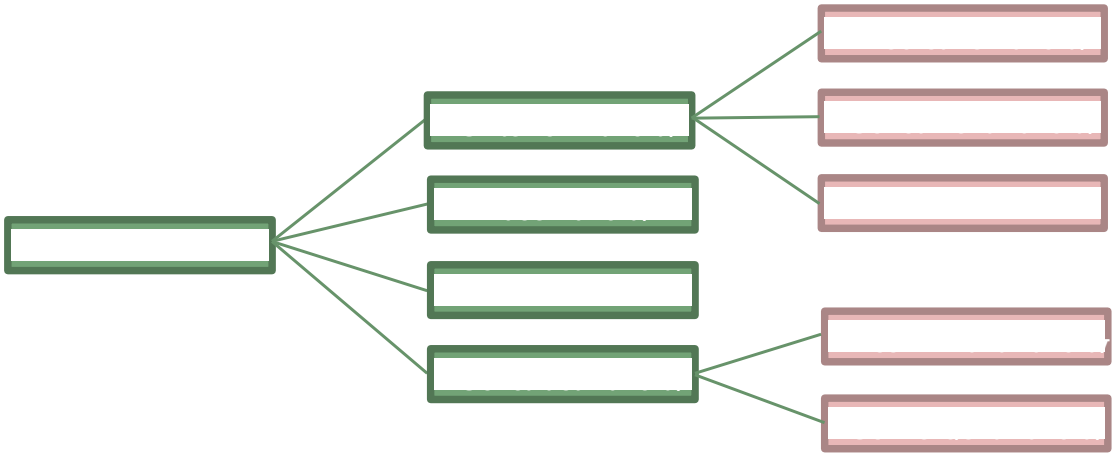
Validity of the findings, data collected, the instrument used in data collection and the research design is of important concern in social research. like reliability, the issue of validity transcends methodological boundaries. In quantitative research validity refers to the ability of the instrument to measure what it is supposed to measure, whereas in qualitative research the issue of validity goes beyond data extending to the research design adopted, the techniques (for example, observation, ethnography, interviews and narratives) used in data collection and the findings discussed in the research study. Validity explains how well the collected data covers the actual area of investigation (Ghauri and Gronhaug, 2005).

According to Roberta and Alison (2015), validity refers to the extent to which a concept is accurately measured in a quantitative study. For instance, a survey designed and instrument to explore organizational survival but which measures organizational growth would not be considered valid.Validity in research is concerned with the accuracy and truthfulness of scientific findings (Le Comple and Goetz 1982). In view of the definition, it is clear to observe that, a valid study should demonstrate what exists and a valid instrument or measure should actually measure what it is supposed to measure.

Roberta and Allison identified three categories on which every good research work must validate its instrument or tools for data gathering:

i. **Content validity**: the extent to which a research instrument accurately measures all aspects of a construct. In other words, this category looks at whether the instrument adequately covers all the content that it should with respect to the variable.
ii. **Construct validity**: The extent to which a research instrument (or tool) measures the intended construct.
iii. **Criterion validity**: The extent to which a research instrument is related to other instruments that measure the same variables.

Fig: Showing subtype of validity instruments of research.



Source:(HamedTaherdoost. 2020)

Research Method

The method adopted in this paper is content analysis using mainly secondary data. The secondary data consist of existing literature on topic such as books, journals, conference papers, and other related documents. Rossman (1989) cited in Kums, Simon Nankap (2019), opined that collection of data and analysis in qualitative research is a simultaneous process. The choice of this method of data collection and analysis was however informed by the focus of the study; that is: Validity and Reliability of Research Instrument in Public Administration.

Reliability in quantitative research

In quantitative research reliability of the instrument used in data collection is the most important concern. It is not just that the instrument should measure what it is supposed to measure but it should measure similarly across space and time. Thus, stability of the instrument for its repeatability and consistency becomes central. The degree to which the instrument, when repeated, produces similar results over a period reflects the extent of reliability of the instrument. Social science research aims at understanding phenomena in a naturally occurring setting. It deals with the social actors who are part of the phenomena to be understood. These social actors are dynamic agents who create and recreate social setting in their everyday life. Observing these activities to measure and explain is a challenging task. Given these challenges and constraints, social science researchers have to make their data, findings and conclusions reliable and valid. As the aim of every research is to contribute to the existing pool of knowledge, conclusions drawn based on unreliable and invalid techniques or procedures is of no use. It is important to note that social phenomena can be studied using quantitative and qualitative research techniques. Quantitative research engages standardised instruments of research whose reliability and validity can be easily assessed. However, the most challenging part is dealing with the issues of reliability and validity in qualitative research. By adhering to certain established practices, a qualitative researcher can enhance consistency and validity of data, and the research findings.

Types of Reliability Tests in Quantitative Research

Reliability of an instrument used in measuring the properties of objects can be tested. However, we can only estimate the reliability of an instrument but cannot calculate. There are different types of reliability tests developed to estimate the extent of reliability of the instrument used in data collection (please note that the most used instruments in data collection in quantitative research are questionnaire or interview schedule or sometimes attitudinal scales. So, in our discussion, the term instrument refers to questionnaire or interview schedule). Reliability can be estimated by the correlation between the two sets of scores.

Test-retest Method: In the test-retest method, the instrument is administered twice, at two different points of time. Important points to remember are: a) the instrument (questionnaire or interview schedule, or a scale) remains same in two occasions, and b) the instrument is administered to the same set of respondents. If the correlation values show consistency between the two tests, then the instrument is said to be reliable. However, what becomes critical in this method is the time interval between the two tests. If the gap between the two tests is short, there is a problem of cueing, i.e. the respondents may remember the earlier test and answer in the same manner leading to higher correlation. If the gap is too large, then there is the problem of maturation, which means that respondents may change their opinion or understanding of a question in the questionnaire or interview schedule as time progresses.

Parallel Forms Method: As the name suggests, in this method two sets of instrument are prepared. The two sets contain questions which provide same meaning. The researcher has to generate multiple questions aimed at measuring the same variable. So, in parallel forms reliability test, instead of generating questions for one set of questionnaires, sufficient number of questions are generated so that they can be divided into two sets of questionnaires. Multiple questions which address same construct are randomly divided into two sets. These two sets of questionnaires are administered to the same set of respondents. The correlation between these two sets is estimated. The two sets of questionnaires are equivalent measures. Hence, this test is called parallel forms method. This method is advantageous when compared to test-retest method as there is less cueing effect. However, this method is demanding as the researcher must evolve multiple questions which are equivalent.

The Split-Halves Method: In this method, the instrument is administered once to the respondents. However, the responses are tested for consistency by splitting the instrument (questionnaire) into two halves. Each half consists of questions which are like the other half. Then, the correlation between the two halves is calculated. This method is dissimilar to the earlier methods as only one questionnaire is administered at one point of time. It overcomes the problems of cueing and generating multiple questions. Moreover, it is administered only once. The difficult aspect of this method is splitting the questions into two equal halves without compromising the validity of the questions.

Internal consistency method: In this method, reliability is estimated by grouping questions in the questionnaire that measure the same concept. Instead of generating one question to measure the concept, researcher must evolve two groups of questions, each group consisting of three or more questions that measure the concept. The questions in the two groups aim at measuring the same concept. The instrument is administered only once. The responses to the questions under two groups are correlated. This method enables the researcher to measure the reliability of the instrument by checking the consistency between two groups of questions. Point to be noted is that, it is not just two groups of questions, but the researcher can generate as many questions as possible and group them so that correlation between them is calculated. It is also possible to measure correlation between different questions by calculating interitem correlation method. Internal consistency is also assessed using *Cronbach's Alpha.* This statistic measures the consistency between the items (questions) used in the questionnaire. There are different types of reliability tests developed to estimate the extent of reliability of the instrument used in quantitative data collection. They are test-retest method, parallel forms method, the split-halves method and internal consistency method. Reliability of an instrument used in measuring the properties of objects can be tested. Higher the reliability of an instrument greater is the credibility of the research study. However, we can only estimate the reliability of an instrument but cannot calculate.

Reliability in Qualitative Research

In qualitative research the findings of the study are based on direct or indirect observation of social phenomena that occur naturally and do not rely on statistical procedures or other means of quantification in drawing inferences. The emphasis in qualitative research is on understanding phenomena in an intense manner. Golafshani (2003) observes that 'the terms reliability and validity are essential criterion for quality in quantitative paradigms, in qualitative paradigms the terms

credibility, neutrality or confirmability, consistency or dependability and applicability or transferability are the essential criteria for quality'. Quantitative research is guided by the objectives of verifying causal relationships, prediction, and generalization. Thus, the instruments used for data collection differ greatly. Quantitative researchers use instruments such as questionnaire or scales in order to measure the property and quantify.

However, qualitative researchers use techniques such as observation (participant or non-participant), ethnography, interview, etc. In fact, it is said that the researcher himself/herself is the instrument of data collection. *While the credibility in quantitative research depends on instrument construction, in qualitative research, "the researcher is the instrument"* (Golafshani 2003).

Some argue that reliability issue concerns with quantitative research as it is overwhelmingly dependent on instruments to measure the properties of objects. Since qualitative research doesn't lay emphasis on measurement, the issue of reliability is of no relevance (Stenbacka 2001). However, the issue of reliability in qualitative research is never ignored. In fact, reliability in qualitative research stands for consistency. Qualitative research is considered reliable if the research findings can be replicated by another researcher. Thus, the qualitative researchers face the challenge of reliability of greater magnitude when compared to quantitative researchers.

Sjoberg and Nett (1992) observe that 'reliability is a function of the scientist's theoretical system, the social order being studied, and the use to which the instrument is to be put'. Other notion, 'trustworthiness' of a research report is also talked about in the same sense of reliability in quantitative research. The researcher is expected to provide accurate observation notes or records. At the same time, the notes or records should not be oversimplified or misinterpreted. If multiple observers are engaged in research, they must be trained to record the same observations in the similar manner.

Some important Considerations to Enhance Reliability of Data in qualitative research

i. If more than one researcher is working on the project, it is imperative that all are trained to observe events, record, and conduct interviews in an identical manner. (Lewis 2009),
ii. Discussing the issues concerning reliability of observations, suggests that researcher must keep changing the time and place of observations. This technique of changing place and time of observations is like that of test-retest method used in quantitative research.
iii. The researcher can also seek information again from the same respondent on the previously gathered information at different points of time. This can establish the accuracy of information provided by the respondent. Researcher can also increase reliability of the research process by seeking information from respondents on the same question but posed in different ways. If the response is similar then the information may be considered as realizable.
iv. To overcome the problems of information gathering in participant observation, M N Srinivas (2009) suggests that the researcher must focus on rapport building with the members of the community or group before embarking on data collection. We can still opine that, data collected in the first few weeks, that is, before the establishment of rapport, should be discarded as it is usually not very reliable. The fieldworker must make himself (/herself) liked and trusted by the people, for only when will they part with true information'. Srinivas (2009) also urges the researchers to know the people and their practices better.
v. Qualitative research marked by intensive fieldwork faces the problems of ensuring reliability to the findings. Emerson (1981) quoting Becker suggests two considerations for assessing the reliability of field data. First, the presence of observer should not constrain the actions of the observed. Second, the observations must be about interactions between members of the group rather than between the researcher and the researched. He also favours the argument that multiple observers enhance reliability of field data.
vi. Replication or repeatability, the hallmark of reliability in quantitative research, is possible in qualitative research only in a loose way (*Emerson, 1981*). He suggests that two researchers' observations on the same setting may differ because of the theoretical and conceptual

understanding of the phenomena or actions. He recommends for 'identifying explicitly the procedures, analytic assumptions, and interpretive devices used to collect, make sense of, and communicate field reports' to make repeatability possible to some extent in field work-based research.

Validity in Quantitative Research

Numerical data obtained using instruments is the subject of scrutiny in quantitative research. This is because the instrument used to measure a particular concept or construct must measure what it is devised for. If not, data obtained using such instrument becomes irrelevant or inappropriate. In other words, the instrument used to measure the property should enable the researcher to measure it. For example, the instrument used to measure empowerment, if measures development, then it may be considered as not valid, because empowerment and development are two different concepts.

The Following are some of the tests developed to check the validity of instruments used in quantitative research.

1. **Face validity:** The most used validity test is face validity test. The instrument (for example, questionnaire or a scale) is accepted as valid if it appears valid for the researcher. Here researcher, as a professional, makes a judgment about the validity of the instrument. It is a casual review of the questions or items incorporated in the instrument. Sometimes, face validity is conducted by individuals who may not have any professional training or formal knowledge. It is the simplest and easiest method of checking the validity of a scale or a questionnaire.
2. **Content validity:** Instruments such as scales are developed to make predictions. For example, the entrance test conducted to select candidates for admission into IITs is an instrument used to make predictions about the academic ability of the candidates. The items (questions) incorporated in the instrument must reflect the larger goal of the instrument. Hence, in content validity, the items are subjected to review by those who are formally trained and have expertise in the subject under study. Usually individuals with considerable domain knowledge are asked to review whether the items used, measure the intended property or not. Consensus opinion is considered in finalizing the instrument. This type of validity test is mostly used by the researchers.
3. **Criterion validity:** It is conducted to measure the validity of the instrument against the criteria set in the study. Two types of tests are considered in criterion validity test. They are concurrent validity test and predictive validity test. Concurrent validity test is conducted to measure the extent to which the items of the instrument correlate with the 'gold standard' available. Generally, standardized, established instruments are used as references to check the validity of the instrument being tested. The predictive validity test measures the extent to which the instrument predicts the expected future observation. For example, instrument developed to measure IQ must help in making the predictions of IQ levels of the respondents.
4. **Construct validity**: Construct validity involves relating one's measuring instrument to the overall theoretical structure in order to determine whether the instrument is logically tied to the concepts and theoretical assumptions that are employed'(Sjoberg and Nett 1992: 303). Thus, this test refers to the theoretical assumptions and the way concepts are operational in the research process. The items (questions) placed in the scale or questionnaire reflects the definition adopted for a concept and the theoretical standpoint of the research study. For example, the concept of family may be defined differently by a functionalist scholar and a feminist scholar. It may be said that construct validity is closely linked to the theoretical assumptions of the study. Thus, we find that construct validity is conducted to test the concepts and their relationships with the empirical reality. This is done at different levels. At one level the causal relationship between the concept and the questions used to measure the concept is tested. At another level, the causal relationship between the theoretical definition of the concept and its operational definition are tested.

Validity in Qualitative research

Issues of validity in qualitative research are complex and varied. Thus, the concept of validity is understood differently by different scholars. A wide range of terms are used to define validity in qualitative studies. Validity is not a single, fixed or universal concept in qualitative research. Rather it is a contingent construct influenced by the research methodology, theoretical assumptions, and the research design of the study.

Validity in qualitative research is affected by the factors related to the researcher. It is observed that validity of the study is contingent upon how observations are described, how they are interpreted, and how the researcher attempts to manipulate (knowingly or unknowingly) data to fit theory. The most important factor that can influence validity is researcher's inherent bias. The other most important issue of validity in qualitative research is the presence of the researcher. As the researcher's presence can affect the nature of interaction among members of the group being studied validity of qualitative study becomes critical.

Challenges to validity in qualitative research in Public Administration

Followings are some of the potential sources of threats to validity as cited in Lewis's (2009).

Descriptive validity: It concerns with the recording of observations by the researcher. It is often noted that researchers don't provide detail description of the observation setting. Accurate description of the site of observation, process of interaction in appropriate words is of great importance in enhancing the validity of the research.

Interpretation validity: This occurs when the researcher tries to interpret the actions or event from her/his own perspective without paying much attention to how actors perceive it. To overcome the problem of wrong or invalid interpretations, researcher must collect elaborate information.

Theory validity: Researcher enters the field site with a theoretical framework. In most cases it is found that researchers attempt at fitting the data into the theory adopted for the study. Or in some cases researchers ignore data that doesn't fit the theory or that goes against the theoretical convictions of the researchers. Researchers are suggested to record and collect data without discarding it from theoretical point of view.

Researcher bias: This is the biggest threat in qualitative research. As mentioned earlier, in qualitative research when the researcher becomes the instrument of data collection, the potential for bias in recording the observation is enormous. Researcher's personal factors (religious, economic, cultural, gender, etc.), theoretical assumptions, political affiliations, etc. influence the collection of data and interpretation of data.

Reactivity: As suggested, researcher's presence in the field site sometimes affects the situation. Researchers, as outsiders, knowingly or unknowingly influence the site of observation. To overcome this problem, the researchers must be conscious of the influence of their presence.

List of Strategies to Increase Validity in Qualitative Research Paradigm

S/N	Strategy	Description
1	Prolonged and persistent field work	Allows interim data analysis and corroboration to ensure match between findings and participants reality
2	Multi-method strategies	Allows triangulation in data collection and data analysis
3	Participant language verbatim accounts	Obtain literal statements of participants and quotations from documents
4	Low-inference descriptors	Record precise, almost literal, and detailed descriptions of people and situations
5	Multiple researchers	Agreement on the descriptive data collected by the research team
6		Mechanically recoded data Use of tape recorders, photographs, and videotapes
7	Participant researcher	Use of participants recorded perceptions in diaries or anecdotal records for corroboration
8	Member checking	Check informally with participants for accuracy during data collection frequently done in participant observation studies
9	Participant review	Ask participants to review researcher's synthesis of interviews with person for accuracy of representation frequently done in interview studies
10	Negative or discrepant data	Actively search for record, analyze, and report negative or discrepant data that are an exception to patterns or that modify patterns found in data

Source: (Researchers Design 2023)

Factors Affecting Validity & Reliability of Data in Public AdministrationResearch

There are many factors that prevent measurements from being exactly repeatable or replicable. These factors depend on the nature of the test and how the test is used (Nunnally, 1978). These factors cannot ignore errors associated with test instruments.

i. Complementarily, Brink (1993) noted that one of the key factors affecting validity and reliability is error. Error is inherent in all investigations and is inversely related to validity and reliability. The greater the degree of error, the less accurate and truthful the results of the exercise.

ii. However, Brink categorized factors threatening validity and reliability of research outcome to include: The researcher; The subjects participating in the project (despondence); The situation or social context; The methods of data collection and analysis. He avers that in a qualitative study the data-gathering instrument is frequently the researcher himself. Thus questions of researcher bias and researcher competency, if unchecked, may influence the trustworthiness of data considerably.

iii. The very presence of the researcher may affect the validity of the data provided by subjects. When a new member is introduced into an interaction, reactive effect can be expected. On the other hand Participants may behave abnormally (Argyris 1952). They may seek to reveal themselves in the best possible light or withhold or distort certain information; in other words the researcher has created social behaviours in others that would normally not have occurred which eventually affects their response.

iv. Testing for reliability is important as it refers to the consistency across the parts of a measuring instrument (Huck, 2007). A scale is said to have high internal consistency reliability if the items of a scale "hang together" and measure the same construct (Huck, 2007, Robinson, 2009). The most used internal consistency measure is the Cronbach Alpha coefficient. It is viewed as the most appropriate measure of reliability when making use of Likert scales (Whitley, 2002, Robinson, 2009). No absolute rules exist for internal consistencies, however most agree on a minimum internal consistency coefficient of .70 (Whitley, 2002, Robinson, 2009).

How to Enhance Validity and reliability of Data in Public administration Research

To enhance the validity, researchers must use certain checklists. 'A validity checklist assists the researcher in establishing techniques that will be used to strengthen validity issues' (Lewis 2009). Some of the validity checks are discussed below:

Triangulation: The most important technique adopted by researchers in qualitative and quantitative research is triangulation. It involves collection of data from multiple sources. Interviews with key informants and members of the groups observed must be supplemented by data from other sources like non-group members and other informants. Secondary sources like reports, government documents, and earlier research studies may be used to supplement the information gathered first hand. This effort strengthens the validity of the research observations and findings. Similarly, data collected through interview schedule or questionnaire, may be supplemented by focused group discussion/observation/case study.

Negative cases, discrepant data, or disconfirming evidence: One technique recommended to strengthen validity is to focus on negative cases, discrepant data or disconfirming evidence. It is often observed that researchers tend to collect data that proves their theory or hypothesis. In the process they avoid negative cases, or sources of data which are felt inconvenient to the researcher.

Bias or researcher reflexivity: It is the most obvious threat to validity in qualitative research. Hence, researcher must state the assumptions, beliefs, values, etc. in the study outcome. Researcher also must state how he/she had identified these threats and methods employed to overcome such threats.

Member checking: It refers to the process of involving those who were the sources of data. The recordings of observations, interpretations, and conclusions by the researcher are to be tested by sharing it with the people who were observed. The members of the group or community are shown these for their opinions, reactions, and suggestions. This exercise provides the researcher an opportunity to correct errors, misinterpretations, lacunae, etc. This also establishes credibility of the research and strengthens its validity.

Prolonged engagement in the field: One of the means to overcome bias or personal factors influencing the research process is to stay put up in the field site for a long time. Prolonged stay enhances researcher's ability to observe the setting as it unfolds naturally. The researcher learns the norms, language, and habits of those being studied and can better predict and interpret the meaning of events. The researcher also can build trust that can lead to identifying different sources for information and who has access to certain information, both of which would enhance the research and the triangulation of data (Lewis 2009).

Thick, rich description: Unlike quantitative researcher who confines to reporting facts, a qualitative researcher has the responsibility of providing the description of research setting, the participants, etc. in detail. While providing the description the researcher must take efforts to transcend the reader to the research situation. The researcher should not just confine to providing the description of the setting and people involved but also describe their emotions, feelings, and experiences.It may be said that validity of qualitative research is challenging, but not impossible. The techniques described so far can enhance the validity of the research. Using a combination of the just discussed techniques, researcher can definitely enhance the validity of the research.

Conclusion

Qualitative research seeks to understand, as completely as possible, the phenomena under study. Ethnographic research has qualitative goals of complete understanding, but interacts with research subjects, in their own setting, to come to that understanding. There are a variety of methods qualitative researchers' uses: they collect data through observation, interviews, and records investigation. However,

while many in the hard sciences view qualitative research as "easy," or not rigorous enough, qualitative researchers do in fact strive for reliability and validity in their findings.

It is concluded that the claim of validity rests on data collection and analysis techniques and instrument, the researcher in qualitative paradigm. In this paper we have tried to explain the concept of validity and reliability in qualitative paradigm in association with quantitative paradigm so that the reader can easily grasps the concepts. A more meticulous approach is need to ensure the so far called validity of the qualitative research, any combination of the suggested strategies can serve the purpose still the selection of the combinations need care and attention.

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