

## **Validity and Reliability: The Functionality of Knowledge Seeking Behavior and Theory Building**

**Ule Prince Alamina**

*Niger Delta University, Wilberforce Island, Nigeria*

**Edeh Friday Ogbu**

*Alex Ekwueme Federal University, Ndufu-Alike, Nigeria*

*Corresponding Author Email: [ede.h.ogbu@gmail.com](mailto:ede.h.ogbu@gmail.com)*

**Aberes Wapaimi**

*Niger Delta University, Wilberforce Island, Nigeria*

**Micah Woyengiimomoemi Jacob**

*National Open University, Nigeria*

### **Abstract**

The scientific approach to knowledge generation hinges in the collection of valid and reliable data about the phenomenon being investigated. These quests for knowledge claims not only satisfy the human curiosity in the need to know but also emphasize the systematic application of science in the investigation of social phenomenon. However, the functionality of knowledge seeking behaviour rests on the sustenance of the human quest for valid and reliable knowledge. These knowledge only become meaningful when they stand to explain the purpose, nature, meaning and shortfalls of the human element which is the centre of inquiry in the behavioural science research. Thus, an understanding of this phenomenon gives insightful knowledge into the kind of data to be collected that would aid in theory building which is the tool for explaining the knowledge that researchers anchors their philosophical assumptions upon. And since theory building in the behavioural science domain requires the collection of accurate and reliable data in order to make salient epistemic claims and generalization, researchers need to uncover the phenomenon under investigation and such understanding must be taken into consideration. These considerations would inform researchers on the approach to be adopted. Based on these the paper concluded that researchers need to understand the human ontological nature which gives rise to epistemological consideration because human behaviour is unpredictable.

**Keywords:** Epistemology, knowledge seeking, ontology, theory building.

### **Introduction**

In the past, scholars had made attempt to explore the concepts of validity and reliability as fundamental instruments in research practice (Abowitz & Toole, 2010); (Mohajan, 2017); (Roberta & Alison, 2015); (Thatcher, 2010); (Zohrabi, 2013) yet scanty evidence exist on its functionality to knowledge seeking behaviour and theory building. Although, research by nature is judged for its intellectual strength and rigor based on the duo concepts of validity and reliability such that knowledge seeking behaviour seems ineffective if these concepts are not considered relevant in research practice. However, the implicit assumption in this view is that the soul of any intellectual domain rests on the sustenance of the quest for valid and reliable knowledge (Eketu, 2018). This quest for knowledge, not only satisfy the human curiosity in the need to know but equally emphasizes the systematic application of science to

the investigation of the human environment (Akinyoade, 2013) in order to seek clear understanding of man's behaviour.

Unfortunately, rather than focusing in understanding the human phenomenon which is the centre of inquiry in the behavioural sciences that would enhance better data collection (Burrell & Morgan, 1979); (Kiabel, 2020), most researchers have often place emphasis on methodological celebrations which has often lead to epistemological errors (Eketu, 2018) These errors remained clogs in the wheels of knowledge because the proximity of research outcomes to the truth not only hinges on the thoroughness of statistical applications but more on the relevance of the statistical choice to the nature of the investigation and the study purpose (Eketu, 2018); (Fubara & Mguni, 2005); (Musthafa, 2014). However, since the scientific approach to knowledge generation lies in the collection of valid and reliable data about the phenomenon being investigated, it therefore implies that the process must reflect rigor and relevance that should fulfill the purpose of explaining the nature, meaning and challenge of the phenomenon so that researchers can use such knowledge to understand and act in a logical and more informed manner; (Lynham, 2002); (Marsick, 1990).

In this way, the underlying assumptions about the human phenomenon which is the center of inquiry especially in the behavioural science research can give meaningful insight into the kind of data to be collected by researchers that would give credence to knowledge generation; (Kivunja & Kuyini, 2017). The idea is that this understanding will support researchers to establish firm faith in the data collection process which is the prerequisite to gaining knowledge about the social phenomena being investigated (Ule, 2021). Hence, the paper seeks to examine the philosophical assumptions underlying the human behaviour because it is the only medium through which valid and reliable data can be obtained that would give credence to knowledge generation and or theory building. And in an attempt to achieving this fit, the study will uncover the need to understanding the phenomena under investigation which is the very bases of epistemic claims and generalization of research outcome.

### **Nature of Validity and Reliability**

Validity and reliability are concepts developed in the natural (Ritchie & Lewis, 2003) and are significant constructs in the measurement of research variables (Baridam, 2001). Validity concerned itself with the extent to which a test measure what it intend to measure while reliability focus on precision and accuracy. The constructs as used in the pure sciences proved to be unsuitable for qualitative investigation and as such caused substantial misunderstanding when applied (Ritchie & Lewis, 2003) though in their extensive conceptualization, the concepts mean well-grounded and sustainable for research as they aid in defining the strength of data. It is on this premise that this paper is devoted to exposing how these constructs can be comprehended in the conduct of qualitative and quantitative enquiry.

### **Concept of Validity**

The concept of validity has been viewed differently by scholars in terms of qualitative and quantitative research despite its relevance in evaluating sufficiency and efficiency of criterion measures. The concept (Validity) is an important criterion for effective research thus the requirement for both qualitative and quantitative research (Baridam, 2001); (Cohen, Manion, & Morrison, 2007). In the latter, validity component is seen as a concept or measurement instrument that measures what it intends to measure accurately (Roberta & Alison, 2015); (Thatcher, 2010) and these measures might be enhanced through careful sampling, proper instrumentation and statistical treatment of data (Cohen, Manion, & Morrison, 2007). Whereas validity in the qualitative perspective is an account that represent the accuracy of findings and facial appearance of the observable fact that is intended to



explain what is based on facts as a matter of dependability and (Creswell, 2014); (Hammersley, 1992); (Kirk & Miller, 1986); (Zohrabi, 2013).

Whether qualitative or quantitative, validity represent the degree at which the result of a given research are truthful. (Ritchie & Lewis, 2003) have asserted that there is an emerging trend in the qualitative writings to shift from validity conceptualization to a more appropriate term of correctness in qualitative evidence. Perhaps the reason, Maxwell (1992) earlier suggested an understanding to be more suitable than the term validity in qualitative research. He further argued that qualitative researchers need to be cautious as not to work with the positivist agenda thereby insisting for the necessity to show predictive, concurrent, criterion related, external and internal validity. Although the validity of measurement is primarily connected to quantitative research with positivist approach and it is kindly recognized as key issues to qualitative research (Ritchie & Lewis, 2003). Undeniably, validity remains the hallmark of all forms of research because it is considered the most relevant and has two significant parts (internal and external validity) that both quantitative and qualitative methods can be addressed.

Internal validation seeks to reveal the justification of a particular issue, event or set of data that a section of research provides that can actually be sustained by data (Cohen, *et al.*, 2007). It addresses the question of whether the predictor variable in a given research creates meaningful change in the criterion variable and the degree to which these change is measurable unambiguously (Dunn, 2001); (Kiabel, 2020). In some degree, internal validity concerns accuracy (Arksey & Knight, 1999) which can be useful to both qualitative and quantitative research practice. External validity concerned itself with the extent to which the outcome in a given study can be generalized to a broader population, context or settings (Last, 2001); (LeCompte & Goetz, 1982); (Lincoln & Guba, 1985). Thus, it addresses the issue of whether such result can be generalized to other people in other places at different times (Kiabel, 2020) because it is at the level of generalization that such results could be considered scientific and useful for expanding knowledge (Dunn, 2001) frontiers. Although, the issues of generalization is difficult as it is based on comparability and transferability hence, Validity demands a reliable measurement instrument whereas such instrument maybe reliable without being valid (Kiabel, 2020); (Kimberlin & Winterstein, 2008) once it is not satisfactory.

### **Typologies of Validity**

The validation component is basically categorized into four forms with each concerning different aspect of measurement (Baridam, 2001). These include content, concurrent, construct and predictive validity. (Mohajan, 2017) argued that discriminant and convergent validity are sub validity taken from the construct validity whereas criterion related validity gave rise to predictive and concurrent while content validity gave rise to face validity. (Cohen, Manion, & Morrison, 2007) believed that the kind of validation to be adopted in any research is a function of the nature of the study to be performed. The scholars came up with ecological, cultural, catalytic and consequential validity to add to content, construct and criterion related validity. These are discussed below.

**Content validity:** The content validity represents the extent at which a sample of a test item represents the content that the test is intended to measure (Baridam, 2001). To exhibit this form of validity, the questionnaire item must indicate it has widely covered the area or item it alleged to cover. (Mohajan, 2017) assert that content validity guarantees the instrument includes adequate set of items that taped into the concept and to effectively evaluate this? (Crocker & Algina, 2006) outlined four step procedures as identifying the domain of interest, matching methodology, gather resident domain experts and analyze outcome from the

matching task. Content validity is divided into sampling and face. The sample validation concerned itself with whether a given populace is adequately sampled by the measuring instrument in question which is anchored on expert judgment whereas the face validation represents the extent to which it measures that which it is supposed to measure according to the subjective evaluation of the researcher (Mohajan, 2017) (Baridam, 2001). Content validity can assume face validation whereas face validation does not guarantee content validation.

**Predictive validity:** This refers to the degree at which a test predicts future behaviour of an individual (Allen & Yen, 1979). Predictive validity can be seen as the correlation between the results of a given measurement with an external criterion as it depicts the ability of the measuring tool to differentiate among persons with reference to future measure.

**Construct validity:** As a compound word, construct validity tends to seek the validity of the entire whole as it is employed to refine a theory for making forecast about test scores in various situations and settings (DeVellis, 2006) A construct is an abstract, implying that its conformity is sought on the operationalization forms clarifying what it means when using the construct. (Mohajan, 2017) argued that this validity is a decision that is often based on the gathering of evidence from several works using specific measuring instrument. Scholars have long suggested that construct validation can be addressed by discriminant and convergent validity (Huck, 2007); (Cooper & Schindler, 2001); (Brock-Utne, 1996); (Campbell & Fiske, 1959). The discriminant focus on using similar approach for researching different construct that yield relatively low or lack correlations among measures which theoretically should not be related (Cohen, Manion, & Morrison, 2007); (Sperry, 2004); that is to say the construct should be able to discriminate if used same to measure another construct. Convergent signify that different approaches for investigating the same construct should give relatively high relationship (Mohajan, 2017); (Cohen, Manion, & Morrison, 2007).

**Concurrent validity:** The validation that focuses on the level at which scores on a measurement instrument and criterion available at the same time correlate (Ary, Jacob & Razavieh, 1979 in (Baridam, 2001). It signifies if the measures correlate with the measures of the same construct.

**Ecological validity:** Ecological validity tends to give exact portrayals of the realities of social situations in their own terms, conventional or natural setting (Cohen, Manion, & Morrison, 2007). Unlike the quantitative research where variables are manipulated and controlled, the qualitative researchers do not try to manipulate variables in that situations occur naturally. Ecological validity is mostly of naturalistic research settings as it tries to demonstrate salient factors of a given situation as possible.

**Catalytic validity:** The catalytic validation strives to ensure that research leads to actions suggesting an agenda. (Kincheloe & McLaren, 1994) opined that the outline for catalytic validation is tied to supporting individuals comprehend their world in order to transform it.

**Consequential validity:** The consequential validity according to (Cohen, Manion, & Morrison, 2007) holds the fact that the traditions in which research data are used in terms of keeping with the capability or intention of the research do not exceed the ability of the investigator and the action related consequences which are both justifiable and satisfied. However, investigations should not be used in ways not intended to be used such as exceeding the capacity of the research data to make illegitimate epistemic claims or support.

**Cultural validity:** Cultural validity depicts an acceptance of the cultural values of those being researched (Morgan, 2005)). It represents the level of understanding to the participants' culture and conditions being studied. (Joy, 2003) perceived cultural validity to be the extent at which a study is suitable to a particular cultural setting where investigation is to be conducted. Cultural validity is a subject in intercultural, comparative and cross cultural kind





of investigation where the intention is to mould research such that it would be apt to the culture of the researcher and the researched. However, cultural validity tends to understand the cultural attitudes to research by reviewing appropriate target language as well inspecting the understanding and translations of data with native speakers and awareness of researchers' own cultural filters (Morgan, 2005)

### **Concept of Reliability**

The meaning of reliability differs in qualitative and quantitative research though; the concept point to the degree at which it is error free and so insures consistent measurement across the various item in the instrument. Quantitatively, reliability represents consistency, dependability and replicability over time, instrument and groups of participants. (Mohajan, 2017) maintained that in the quantitative research, stability, consistency and repeatability of research outcome is considered reliable if dependable outcomes are obtained in identical situation at different circumstances. Reliability here signify accuracy and precision whereas in the qualitative approach, reliability tends to be viewed as the fit between what was recorded as data and what really occurred in the natural setting rather than accurate measurement between different observation (Sharma, 2010).

Generally, reliability is understood to concern itself with the replicability or trustworthiness of research outcome and whether or not they would be reproducible using same or similar methods (Baridam, 2001); (Chakrabartty, 2013) though the degree at which duplication occur in qualitative approach of investigation has been queried severally. Lincoln and Guba (1985) argued that the concept of replication in qualitative investigation is naive, given the likely complications of the phenomenon being studied and the unavoidable impact of the context. Due to the concerns in qualitative research dynamics, the idea of seeking reliability in this perspective is frequently voided (Ritchie & Lewis, 2003). However, (Kimberlin & Winterstein, 2008) opined that reliability be it in quantitative or qualitative research is used to assess the stability of measures administered at different intervals to the same individual and the uniformity of set of items from the same test. That is to say accurate result which increases the chances of making correct decisions can be obtainable if better reliability is performed (Mohajan, 2017). This is not to say it is wholly possible to give an exact calculation of reliability (Roberta & Alison, 2015) but an estimate can be achieved through several measures. Reliability has two dimensions (internal and measure stability). Internal reliability or consistency addresses the issue of whether the indicators that make up the scale are consistent and homogenous or correlated while measure stability emphasizes consistency of result if same measurement scale is repeated on same person (Kiabel, 2020). Internal reliability include Cronbach's alpha, split half technique, and so on while measure stability include test-re-test seen below!

### **Forms of Ensuring Reliability**

In order to ensure reliability in the utilization of research instrument for measurement, three basic principles must be considered. These principles are the attributes of reliability which include stability, internal consistency and equivalence.

**Stability:** Stability is an assessment of consistency over similar samples (Mohajan, 2017); (Cohen, Manion, & Morrison, 2007). A reliable instrument for a piece of investigation tends to yield similar data from similar participants over time. The implication is that, researchers seeking to express this form of reliability must have to choose a suitable time scale between the test and retest. Stability is the consistency of outcome using an instrument with repeated testing method (Roberta & Alison, 2015). The method has two approaches test retest and parallel approach. The latter (parallel) is obtained by sharing different form of the original instrument to the same group of individuals (Mohajan, 2017); (Roberta & Alison, 2015). It

scrutinized whether or not the items within the scale are all the same (DeVellis, 2006). The former (test-retest) is obtained by repetition of same measure on the participants more than once under similar conditions (Roberta & Alison, 2015); (Graziano & Raulin, 2006) (Cooper & Schindler, 2001) argued that in ensuring reliability using the test retest approach, time should be considered prominent because long time duration may give rise to situational factors or change as short period may also give rooms for participants to remember previous test.

**Internal consistency:** Internal consistency evaluates the level at which different test items using to probe same measure produce likely results. It is assessed using items such as Kuder-Richardson coefficient, split half technique and cronbach alpha (Kiabel, 2020). Kuder-Richardson gives an estimate of the reliability of a single test from a single administration. (Baridam, 2001) assert that information needed for this kind of test is the number of items in the test which is estimated through the determination of how the items in the test associate to all other items to the test as a whole. As a more complicated version of the split half, Kuder-Richardson is more accurate than the split half as it involves the process of combining all possible average in order to determine the correlation which is between 0-1 (Roberta & Alison, 2015).

In the split half, results of a given test are divided into half and their correlation is calculated comparing both halves (Baridam, 2001); (Roberta & Alison, 2015). As an easy and quick way to establishing reliability, split half can only be useful with large questionnaires in which the construct is measured with same items (Chakrabartty, 2013); (Mohajan, 2017). Cronbach alpha is analytical software used to test reliability of research instrument (Kiabel, 2020). The instrument here is keyed into the software and the system gives result that comes in different range. The cronbach alpha gives a coefficient of inter item correlation where the average of all correlations in every combination of split half is determined (Roberta & Alison, 2015). The alpha coefficient value ranges between 0 and 1 where 0.7 is an acceptable score of reliability (Nunally, 1978)

**Equivalence:** Equivalence form of reliability is a process of determining the level of agreement between two or more observers (Roberta & Alison, 2015). It demands dual form of measuring instrument that maybe considered parallel. The dual approach is administered to a sample of individuals where the two sets of measures are correlated to get an estimation of reliability. These forms of reliability can be achieved through inter rater and equivalent forms. The inter rater concerned the very extent to which collected data are obtained in a consistent manner, that is to say if more than one investigator is involved in a piece of research then there should be an agreement among the researchers on the ways data is to be collected or entered (Cohen, Manion, & Morrison, 2007); (Keyton, King, Mabachi, Manning, Leonard, & Schill, 2004). The equivalent form depicts a scenario where the instruments yield similar results when applied simultaneously to matched samples. The challenge with this form of reliability technique is that it is difficult to construct two forms that are truly equivalent.

### **Theory Building Process in Behavioural Sciences**

Theory is a tool for explaining reality which research revolves around (Akinyoade, 2013); (Kiabel, 2020) thus, validity and reliability hold unique place in its building process as they form the very bases of epistemic claims and generalization of research outcome. Perhaps, the reason some scholars hold the view that theory fulfils the primary purpose by virtue of its application which summarizes existing body of knowledge that provide procedures for carrying out research and interpreting new information (Gelles & Levine, 1999 in



(Akinyoade, 2013). These guidelines are used to linking the philosophical foundations comprising the ontological assumptions and epistemological considerations to empirical data collection (Akinyoade, 2013)

In this way, validity and reliability remained central to theory building because they give credence to appropriate data collection methods and processes. These methods give rise to two kind of knowledge namely process and explanative knowledge (Lynham, 2002). The former (Process knowledge) concerned itself with the form of increased understanding of how things work and what it means while the latter (Explanative knowledge) involves the predictive and explanative nature of knowledge. Whatever method adopted by behavioural science researchers, theory building remains a purposeful process of recurring circle by which logical descriptions, explanation and representation of observed phenomena are generated, confirmed and refined. These issues are critically observed and understood and as such forms the basis of developing a system of ideas that is informed from the human experiences. Nevertheless, theory building remained an ongoing process of generating, confirming, applying and adopting theory (Lynham, Theory building in the human resource development profession. , 2002)) to understanding the human phenomenon and his environment.

### **Validity and Reliability as the Functionality for Knowledge Seeking**

Going by the increasing quest to expanding knowledge frontier, individuals continually seek for knowledge expansion that will enable them fit into society as well solve organizational problems. In seeking this knowledge, the place of validity and reliability is not left out as the concepts set the foundation for data collection which is fundamental to generating knowledge. The essence of interrogating these concepts in research methodology is to gather relevant data about social phenomena that gives credence to a more functional understanding of society and its environs devoid of biases as well increases transparency in methodological approach (Roberta & Alison, 2015); (Singh, 2014). As the functionality of knowledge seeking behaviour and theory building, validity and reliability tends to improve the accuracy in the evaluation and assessment of research outcome (Travakol & Dennick, 2011). The evaluation and assessment becomes relevant as it ensures data collected are sound and give accurate information whose results can be replicated to expand knowledge seeking (Mohajan, 2017)

Following the work of (Burrell & Morgan, Sociological Paradigms and Organizational Analysis., 1979), there are the assumptions of an ontological nature and epistemological orientation whose concerns were on the fundamental nature of social phenomena and the very bases of knowledge. Individuals seeking for knowledge must first of all understand the essence and nature of the phenomena being investigated. It is only at this level of understanding the phenomena under investigation that valid and reliable data about individual actions and behaviour can be meaningful when collected. The ontological nature helps researchers to conceptualize the forms and nature of reality and what is believed to be known about that reality. These knowledge enable individuals to understand the kind of data needed that will make meaning (Kivunja & Kuyini, 2017) as well solve the problems for with which it was collected. How researchers go about gathering these data profoundly affect how they go about uncovering knowledge about the social world which is the bases for knowledge expansion.

Obtaining valid and reliable data constitute the very bases for gaining knowledge and as such scholars put in the question of how this knowledge can be acquired and communicated to others become relevant (Kivunja & Kuyini, 2017). In answering these epistemic questions, Kivunja and Kuyini further assert that researchers quest for knowledge expansion has enable

them established firm faith in data which has affected the way they go about uncovering knowledge in the social context.

In as much as validity and reliability are relevant to increasing knowledge seeking behaviour, it equally has some threats. These threats ranges from instrumentation, selection bias, error in methodological selection, research implementation, statistical testing, inadequate operationalization of variables, lack of representativeness of available and target population, etc (Cohen, Manion, & Morrison, 2007); (Eketu, 2018); (Mohajan, 2017). It is crystal clear that these threats cannot be totally eliminated in research practice therefore; researchers need to put in their very best in trying to minimize these threats in a logical manner.

### **Conclusion and Implication**

Research is judged for its intellectual strength and rigor based on the duo concept of validity and reliability such that knowledge seeking cannot be effective if these concepts were not considered relevant in research practice. In achieving this fit, researchers need to understand the phenomena under investigation which is the very bases of epistemic claims and generalization of research outcome that is essential and or an influencing factor to decision making process. The implication of these assumptions is to enable researchers make salient decisions on how to acquire knowledge as well communicate the information to others which is a function of seeking behaviour. This behaviour requires an accurate understanding of the individual and his environment which is required through the collection of valid and reliable data.

In as much as researchers try to uncover the truth about social phenomena that give credence to theory building, validity and reliability remains cardinal. The essence is that in trying to extract valid and reliable information from participants which forms the bases of knowledge seeking and theory building, the duo concepts ensures accuracy and reliability in terms of data collection. And since human behaviour becomes unpredictable we conclude that researchers need to understand the human ontological nature which gave rise to epistemological consideration. This consideration forms the bases of understanding the human nature which remained the precursors to determining the methodological approach of inquiry into the knowledge domain. The idea is to take sound epistemological position that would give researchers the foundation for accurate data collection process for conducting and interpreting new information that would explain human behaviour within a specified framework.

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