

COMPARATIVE TRADITIONS OF RESEARCH METHODOLOGIES

Egbula, F. U.

*Department of Mass Communication
Faculty of Communication Technology
Cross River University of Technology, Calabar, Nigeria
E-mail: fegbula@yahoo.com*

ABSTRACT

The existing body of literature on research methods indicates that investigators persist with three methodological traditions. Either one is in the Humanities, Social Sciences or Science. This study examined the nature of each of the existing three research traditions and how they differ in their methodological approaches. The literature on research methods describes how the investigators in the humanities tradition depend heavily on the documentary methodology in their search for truth. In contrast, reports indicate that social science investigators lean heavily on the survey approach to establish evidence from their work. And for the scientist, there have been reported cases of heavy reliance on experimental methodology. This study was deduced from the theory of inter-subjectivity. This construction facilitated the understanding of the common ground on which the investigators from the three research traditions operate in their search for truth. Thus, researchers in all three traditions emphasize the significance of "validity" for which the inter-subjectivity theory provides a backbone. In order to analyze the tradition of each research design, the approaches of the historian, social scientist, and the natural and/or physical scientist were used as case studies. The conclusions arrived at in this study were based on the objective analyses of these case studies.

Keywords: Traditions, research, methodology, investigation

INTRODUCTION

In recent times, research method writers seem to be focusing on the development of easily understandable procedural techniques. Emphasis is heavily weighing on the explicit communication of the methodological processes that eventually led to the establishment of convincing evidence. The increasing emphasis on procedural issues explain why most research information processors concentrate on the "design" and "methodology" sections of every research report. For the same reason, all researchers strive to carry along the research information consumer community by unambiguously outlining the procedures through which they produce the outcomes of their enterprises.

However, there is a school of thought that posits a baseless claim that the social scientist's methodological principles are more superior to those of the historian. There is apparently no scientific validity for this assertion. Investigators in all the traditions try all time to defend their works within the scientific community. The society needs the skills of the researchers in all the three traditions. Everyone is

important. Admittedly, the existing three research traditions have continued to persist with a common meeting point. All of them enduringly place emphasis on "validity" consideration. Investigators in each tradition pursue rigorous methodological procedures that lead to the establishment of precise evidence. However, the three traditions have some points of departures that cause them to differ. The historian relies on secondary sources of information - books, reports, record of court proceedings, minutes of meetings, constitutional documents, historical records, diaries, news columns and written pieces of documented evidence. He labours to analyze the content of these written sources in search of evidence.

The social scientist takes a different route. He depends on secondary sources such as oral testimonies. The use of gallop polls in most surveys represents the social scientist's source of information. The use of self-report instrument such as data-gathering questionnaire is popular with social scientists. The investigator collects and collates data from these oral sources and labours to translate them into convincing evidence. On the other hand the scientist - the empiricist and astute experimentalist traverse a different route. The distinguishing feature of the scientist approach is the attachment to laboratories for problems that lend themselves to experimental tests. Most of these tests deal with observations of phenomena to observe processes leading to the discovery of evidence. The test of theories that border on causes and effects are undertaken to establish evidence about relationships between different sets of variables.

In all the three traditions the problem that persists is the ability of the investigator to generate rigorous controls that prevent distortions arising from the effect of extraneous variables. The study intended to compare and contrast the research methodological traditions of three disciplines. Based on this, the following questions were asked.

- (i) How do historians approach the design and methodological issues of their research problems?
- (ii) How do social scientists handle the design and methodological issues of their research problems?
- (iii) How do scientists proceed with the design and methodological issues of their research problems?

TRADITIONS OF RESEARCH

The available research methods literature interestingly corresponds to the three research traditions. The popular issues that frequently come on the discussion include: validity, reliability, sampling, instrumentation, data-gathering procedures, data computation, data analysis and statistical techniques for testing significance and degree of confidence. These issues are relevant and represent a common feature in most method books. Thus, some of these texts are devoted to the treatment of the historian's design considerations. And, of course, there is a large supply of texts that discuss the social scientist's procedure, while others treat the scientist's techniques of enquiry.

This review takes on several case studies of design and methodology to highlight "validity" and "reliability" control strategies. Guttman (1991) devised the Cornell Technique for Scale and Intensity Analysis. The device considered pretest-posttest strategy that determines prior knowledge base and post exposure achievements. This involves the application of his 5point Bi-Polar Attitude Scale. For the pretest Guttman preferred a small sample of respondents with relatively more items on the scale to ensure validity and reliability components. For posttest, however, he placed emphasis on the use of a larger population of respondents with relatively fewer items on the scale because at this stage the validity and reliability issues are ensured.

Chander, et al (1986) explained the predictive design for attitude change and behavior modification, using surveys. For program evaluation, he proposed the use of pretest-posttest scales with a longitudinal design that permits a systematic evaluation of measurable responses that show post exposure incremental knowledge. In development communication planning, Lerbinger, O. (1992) discussed persuasive strategy that uses three phases of survey in a predictive design. In his analysis the three phases include pre-awareness survey, post exposure survey for feedback and impact study at the end of the program. Also in attitude change predictive design, Alao (1981) proposed the use of the Zaltman Duncan Social System Resistance Adoption Model which was found useful in planning innovation campaigns in highly structurally differentiated social systems. The model recommended community profile survey before the program implementation phase.

Some attitude change designs show a tendency to deviate from appropriate situational relevance. Hanneman (1989) contended the use of the Henneman-McEwen Model as appropriate for situationally relevant conduct of attitude change studies. Hanneman (1981) proposed interdisciplinary design for the study of communication in social systems with diverse sub-cultures. He noted that such designs should be eclectic in order to accommodate the contributions of researchers from related disciplines.

In their contribution, Chander and Karnik (1989) proposed a predictive design which applies the Chander - Karnik 3 - stage program evaluation research methodology. The stages included formative evaluation, process evaluation and summative evaluation research inputs. Communication investigators and their social science colleagues conducted attitude change researches in different situations to test the effect of source credibility in attitude change communication programs. Fulton (1980) successfully proved that a communicator of high credibility was more likely to change the attitude of his audience than a communicator of low credibility.

SAMPLE CASE STUDIES OF RESEARCH METHODOLOGICAL TRADITIONS

Research activity is designed to lead to the establishment of truth or the discovery of relevant new knowledge. In assessing the validity of research findings, people want to know the procedures that have been followed. Generally, validity implies the extent to which the investigator's instrument measures the phenomenon that he claims to be observing. Although this brief definition may be accepted in principle by many researchers, the actual interpretation and application of the definition varies between the historian and the social scientist.

Although certain commonalities may imply in the methods of approach to investigation employed by the historian and the social scientist, basically the historian belongs to the documentary research tradition, while the social scientist is essentially attached to the experimental and survey methodological research tradition. Here, then lies the essential difference between the two. In assessing the meaning of the term "validity" as conceived by the historian and the social scientist, it is important that the materials they work with and the procedures they employ in obtaining results and conclusions be carefully considered.

CASE STUDY 1: Historical Research Tradition

The historian is concerned with documentary research - the search for facts which have been buried in diverse forms of existing records - legal codes, constitutional documents, bill of rights, declarations, recorded speech, newspapers, diaries, memoranda, books, court decisions, letters, minutes of meetings, proceedings of tribunals ...documents which represent the actions, thoughts, deeds, and programs of the historical human race. The bulk of these documents represent the resources and legacies of institutions, societies, clubs, organizations, religious sets, governments, firms, individuals and groups. The historian has these materials to work with in carrying out his research undertaking. The validity of his research findings often depends on how he organizes these materials and what he is able to get out of them based on sound design and conduct of his research project.

To the historian, therefore, "validity" means the extent to which the documents he consults represents the authoritative source of the same evidence; the extent to which the evidence extracted from such a source actually represents the final product (truth, evidence, proof, or exhibit) as provided in his working hypothesis.

TEST OF VALIDITY IN HISTORICAL RESEARCH

The procedures through which the historian assesses "validity" are measured on a number of conditions which he makes sure are met.

- He ensures that the historical event from which he extracted evidence was part of clusters of events that follow rationally upon one another.
- He ensures that the chronology of the events conform to established order (Dates, periods, eras, decades, reigns, centuries, etc)
- He ensures that the relationship between events and facts are clearly brought out.

- He ensures that all labels which mark events are correctly quoted
- He scrutinizes whatever grouping or classification system he employs to ensure their goodness of fit.
- He ensures that the content he studies fit the classification system adopted
- In selecting sources, he ensures that he had his documents critically tested by comparing them with existing ones; cross-questioning the source and cross-checking its content with available alternative contents, that is genuineness and authenticity of records.
- Ensure that as far as possible primary sources (documents, were preferred to secondary and tertiary sources, e.g. the minutes of the proceedings of a meeting should be preferred to a press release about the meeting as a source of information about the organizations policy decision-making process or voting procedure.
- He ensured that high probability such as judgment based on commonsense and experience was employed in decision-making and conclusions.
- He ensured that a reasonable balance between "subjectivity" and "objectivity" was maintained.
- Ensured that he supplemented information at hand with references to other text. e.g. the use of a competent witness to reinforce evidence from documentary content.
- In deciding and making conclusions on important subjects, he ensured that the opinion of one or more experts on the subject is obtained.
- He ensured that he stayed skeptical about small details.
- In checking personal bias he ensured that all possible sources of bias were controlled, e.g. he avoided rigid confinement to his hypothesis to the exclusion of information or evidence that go contrary to it. Also ensured that he recognizes and acknowledges all possible assumptions connected with his research interest.
- Ensured that the use of evidence from author(s), was made in conjunction with inferences about his life and character.
- Ensured that in the use of testimony, the value is weighed against recency in time and space between the testifier and the event.
- Ensured that where possible more than one witness was used, cited, or reported.
- Ensured that the on-the-spot eyewitness (es) were preferred for use or citation to distant reporter(s).
- Ensured that presented evidence has both internal as well as external clues for verification.
- Ensured that where possible documentary evidence is supported with available concrete or physical evidence, e.g. reference to statues, monuments, buildings, structures, drawings, inscriptions, coins, tape records, affidavits, signed agreements, signed petitions.

CASE STUDY 2: Social Science Research Tradition

While the historian is faced with volumes of documents to analyze (content analysis), the social scientist is faced with human subjects - their traits, motivation, emotions, personality, beliefs, opinions, behavior, habit; their institutions, organizations, groups and values. Depending on whether he is involved with experimental or survey design, the validity of the social scientist's research findings would depend on a combination of controlled systems he builds into his design and how he organizes his research venture.

From the point of view of the social scientist, the term "validity" means the extent to which his instrument accurately measures the concept or trait which it assumes to measure, e.g. the validity of a standardized 10 test is the extent to which it accurately measures the concept "intelligence".

MEASURES OF VALIDITY IN SOCIAL SCIENCE RESEARCH

Most social scientists employ four procedural devices for assessing the "validity" of their research finding. Firstly **Face/Content Validity**: At this level, assessment of validity is based on the informed judgment of the investigator which is guided by a number of probing questions which he puts before him as test of evidence for the plausibility of the results obtained. E.g. he asks himself..."is the instrument actually measuring the trait (e.g. aggression) which he (the investigator) claims to measure? Does the instrument (e.g. questionnaire) provide adequate sample of the trait "aggression". On the basis of face validity, the social investigator would want to know the definition of the trait aggression. This would call for operational definition or working definition of the trait. If he is measuring aggression (verbal or physical) he would want to know what behaviours provide indices of aggression (each time an individual utters verbal expression that hurts other peoples' feelings; or each time a child hits his playmates in angry fashion.

Secondly, he would want to ask himself: does the data resulting from the application of this instrument actually represent the concept being studied, e.g. does the observed behavior accurately represent aggression? Obviously, if someone turns down invitations to dinner, this would not represent aggressive behavior and would not provide face validity index problem. Because most questionnaire items are decided by different researchers investigating the same problem, the relationships between concepts and observable traits often suffer. Similarly, when questionnaires are to be used to collect data about the trait, the choice of words for each item usually introduces semantic problems.

When these things happen, the instrument may not be measuring the trait in actuality. Thus, in assessing validity, the social scientist wants to know whether the concepts were accurately operationally defined; he would want to know whether judges had been used to prejudice questionnaire items. He would want to know whether the questionnaire as a whole was pretested. To the extent that the instrument measures some other trait other than (for example, aggression) face validity is not

met; not the other hand; to the extent that the scale measures nothing else but the trait (e.g. aggression) it is said to have face validity. In assessing the adequacy of the definition of the concept, the investigator seeks the agreement among other researchers in the subject area of research (inter-subjectivity).

THE MEASURE OF PREDICTIVE VALIDITY

The second level of assessment is the investigator's desire to know to what extent the data yielded by the application of his instrument may be used to predict future events or other traits for which evidence is not at present available to him; the extent to which present evidence collected by the instrument may be used to predict also past events, e.g. the admission authorities in the U.S. graduate schools employ various standardized tests to screen and select their students. In assessing predictive validity, the user would want to know whether the scores which represent the ability of students actually provide indices for future performance of such students in the graduate school. Testing instruments such as LSAT, GMAT, GRE, SAT and the results obtained by their administration would be assessed in terms of their ability to provide predictive accuracy for students' future performance or past educational preparation.

Social scientists using such scales often face the problem of spurious effects - how can it be determined that at least some students had no access to test content before testing dates; does the test items represent expected academic experience or past educational preparation; does the test favour students from one culture and educational system over those of another; do the students who have taken the test more than once enjoy undue advantage (history); does the testing conditions depress the ability of the students, like anxiety (reactive effect); does repeated attempts provide better adjustment for some students (maturation). The problem had been resolved by the practice of admission personnel using more than one instrument for determining the admissibility of students, e.g. inspection of educational credentials, letters of recommendations, etc. (multiple application of instrument).

CONCURRENT AND CONSTRUCT VALIDITY

Another measure of validity assessment is in the extent to which the data yielded by the instrument compares with known examples of results obtained by the application of similar or different instruments verifying the same trait, e.g. if the test scores obtained by the GMAT compares fairly well with those obtained by a good alternative like GRE it can be asserted that concurrent validity was established.

The investigator not only wants to assess the validity of the measure, but also the underlying theory. In this case, he would want to know whether the hypotheses used represent a logical deduction of the theory he proposes to test. If he was concerned with causal relationships among the variables he is observing, he would want to assess the ways and the degree to which one variable affects the other; the conditions under which variable X affects variable Y and the properties which characterize

each of these variables. He would also assess the direction of causality. Do changes in the independent variable X, move the dependent variable Y to the direction of X or to opposite directions e.g. does the increase in school fees, variable X, cause increase in school drop-outs, variable Y.

Finally, the researcher would want to know whether the hypotheses constructed from a given theory would yield similar results in different settings, that is, the extent to which the results obtained can be generalized beyond the immediate sample population. Other assessment criteria would be the appropriateness of the sampling procedure for the research problem in hand, e.g., random or stratified, and for the application of statistical tool, its appropriateness and the predetermination of the level of significance-setting the limit to the extent that the observed relationship or trait was due to sampling error, e.g. a relationship is significant at all.

As researchers, the historian and the social scientists have certain commonalities in assessing "validity". Both recognize the value of "face validity"; both employ inter-subjectivity for validation; the social scientist recognizes the content analysis procedure which is in the realm of the historian's documentary method. But, more people agree that the social scientist employs more stringent controls than the historian.

CASE STUDY 3: The Scientific Research Tradition

The natural and/or the physical scientist adhering to the tenets of empirical research culture employ the experimental research methodology. The merit of the experimental methodology which makes it superior to the survey method is the in-built control systems in the design. While most survey studies are conducted in the field, most experiments have laboratory environmental settings. In contrast to the decried low quality of data obtained by survey designs, the experimental designs and data-collecting procedures are amenable to high quality data. Most experimental studies are design to test a theory or investigate possible cause-and effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing the results to one or more control groups not receiving the treatment. The essential condition in the control and treatment of groups is random assignment of subjects.

THE WORKING SAMPLES OF EXPERIMENTAL RESEARCH METHODOLOGY

The most frequently investigated topic by the experimental approach is the testing of a theory, viz: Students with high Intelligent Quotient (IQ) are likely to be more test-anxious than students with low IQ. Children exposed to televised violence are likely to exhibit aggressive behavior than children who do not receive such exposure. Pupils with nervous dispositions are more likely to be speech anxious than pupils with less nervous dispositions. Other studies of casual relationships also lend themselves to the experimental methodology, example, testing the efficacy of a new drug; the effect of a new teaching method on the rate of learning; and the learning facilitation of humor in televised educational programs.

THE CHARACTERISTICS OF EXPERIMENTAL RESEARCH DESIGN

The essential characteristics of experimental design for theory validation which claim superiority over the survey methodology are:

- a. The procedures require rigorous control of experimental variables either by direct manipulation of the independent variable or randomization.
- b. The procedure uses a control group as a reserve against which to compare the affected condition of the experimental group which was exposed to an experimental condition using a pretest-post-test approach.
- c. The procedure attempts to increase the effects of the variables associated with the research hypotheses, while controlling to reduce the effects of the non-associated variables that might render spurious effects on the results.
- d. The procedures attempt to reduce random variance and errors of measurement.

The major drive in the experimental methodology is the maximization of conditions which increase internal validity by random selection of subjects for participation in the experiment; random assignment of subject to groups, and random assignment of subjects to experimental and control groups; deliberate manipulation of experimental variable to produce the desired difference; by identifying and controlling all the non-experimental variables. In the experimental method, there is a strict handling of the pretesting of the instrument to measure the trait and there is increasing practice in the conduct of pilot studies to increase confidence in the instrument and the design.

The experimental methodology employs stringent control systems to maximize the effects of the manipulation of the independent variable(s) on the dependent variable(s) while holding constant all variables of concern to the experiment, the Survey Research Methodology, on the other hand, does not employ similar rigorous control systems. Survey procedures are aimed at providing the researcher the chance to describe an on-going social phenomenon or situation, factually and accurately. The most frequent subjects in survey methods include: Gallup opinion poll to assess the voting intentions of the electorate; opinion survey to obtain approval for a proposed social program, etc. The characteristics of the survey research approach which make it inferior to the Experimental Designs are that it does not necessarily seek to explain relationships among variables; it does not concern itself with hypothesis testing; and does not make predictions.

From the foregoing, comparative analysis, it can be assumed that the Experimental Methodology represents the more empirical scientific enquiry because of the controls it presents over the important variables. The survey approach, on the other hand, is weak in its power to manage variables that are of concern to the design.

The comparative analysis presented indicated that there are three broad research traditions. In assessing validity of research findings investigators in the three traditions are in agreement over the need to follow the procedures that led to the findings. The definition of validity - which implies the extent, to which the scale used for the study, actually measures the phenomenon under study. And reliability -

that denotes the extent to which the data yielded by this instrument actually represent the concept of study. Admittedly, all the researchers in the three traditions accept these definitions in principle, but the actual interpretation of the two measures varies between the historian and the social scientist.

In spite of existing commonalities in the methods of approach employed by the investigators the historian belongs to the documentary research tradition, while the social scientist is attached to the survey methodological tradition. And by distinction, the core scientist is confined to the experimental technique of enquiry. Here lies the essential difference among the three traditions of investigation.

CONCLUSION

From the careful study of the design and methodological explanations that have been offered, it is concluded that the burden of proof lies in the following premise that the historian, working with documentary materials must follow the outlined 20 - point procedures to establish the validity component to support his claims to evidence. On the other hand, the social scientist also faces a similar burden of proof. He/she must convince the community of readers of his research report that he has followed the rigorous methodological procedures to arrive at his findings. And for the core scientist, he/she must defend his experimental procedures such as the rigorous control measures generated into the processes that led to a final result.

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