Harmonizing the Use of Research Terminologies: An Explanation and Clarification of the Meaning of Some Research Concepts.

by

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Abstract

The paper explains the disparities in the use of research terminologies which often leads to the confusion by research practitioners and postgraduate students in their appropriate choice of research methodologies. Experiences have shown that many people cannot differentiate between research paradigm and research methodology, like wise from research method and research methodology. In addition, there is a great dilemma in the use of research instruments and research techniques, which most people use interchangeably while in the actual sense, they mean different things. It is the intent of this paper to clarify these terms and make them clearer to the researchers. Although the problems arise from the different authors of the books of research, most text books, depending on the disciplines of the authors, use the terminologies differently with little or no harmonisation, which invariably leads to confusion or misunderstanding by students, researchers and consumers of research.

Introduction

There is ample evidence that researchers and students at undergraduate and graduate levels, including teachers of research, over the years especially in the developing world, have encountered constraints, dilemma, and disparities in the use of research terminologies in the research method literature.

Several terms exist that are used interchangeably by different authors from different disciplines without consistency. Much of the inconsistencies in the use of terminologies creates confusion among research practitioners and students particularly in the areas in which research process is gaining ground. Terms such as research paradigm, methodology, methods, techniques, strategy, approach, instruments, etc. are used by different authors and scholars in the field of research from different backgrounds to mean the same thing, or are used interchangeably without enough clarification.

The significance and the benefit of research to the development of human beings and his working environment should not be under estimated because research serves as a weapon that fights ill-development within a particular discipline, environment, society, communities, and organizations. Research also serves as an instrument that could be used to checkmate any sort of laxity within organizations and it is needed for accountability of services. In addition to this, research has become an apparatus that could be used to examine the situation within the society, community, organisation (i.e. how we do things; the way we do
them; problems we faced in doing them; and the way we evaluate them). It is essential to us especially in the improvement of our services; living condition; development; and many physical structures that our lives depend on. Research in its capacities has clear and direct answers to posed questions; and that is why Harvey (2000) indicated that research can help us to identify problems in the work place and very often provide solutions to those problems.

As such, it is valuable to understand the various concepts of research terminologies in such a way that they can help us to develop a good research design, to also have harmonization in the use of research terms as opposed to what obtains at present. This paper is designed to assist research students and provide them with the understanding of the different terms used by authors and scholars interchangeably which may be confusing to them. This paper will also provide an insight into the understanding of the research process in order to enable students and readers to have the opportunity to clarify these terminologies. In so doing, they will become self-conscious and avoid the dilemma of choosing the wrong term or mixing the terms during their research projects.

Disparities in the use of research terminologies

It is a common practice by most people especially who do not have a very good research background getting confuse in using research terminologies. For instance, research paradigm is being used by some students and researchers as research methodology and the vice versa, so also research methodology is being use as research method. Likewise research method is being use as research techniques and research technique as research instruments. In actual sense this is not so, because all these terminologies are arranged and followed in orderly manner which represent a system of hierarchy just like organisational hierarchy or branches in a tree. The failure of the users in following the arrangement comes from the authors of different disciplines that have written extensively about research process. They do not emphasised on following the research process as the hierarchy.

Paradigm versus Methodology

Research Paradigm: A research paradigm is an individual view of the world that dictates the nature of the research they engage with (Pickard 2007). Therefore research paradigm is a philosophical base that derived the research as explained by Kuhn (1970) that a paradigm is a means of viewing world, influencing but not controlling the assumptions and direction of the research. This according to Pickard (2007) cited in Kuhn (1970) views the paradigm as the entire constellation of beliefs, values, and techniques and so on, shared by members of a given scientific community.

Lincoln and Guba (1985) explained that a paradigm represent a distillation of what we think about the world (but cannot prove). Our actions in the world, including actions that we take as inquirers, cannot occur without reference to those paradigms; As we think, so do we act”. But, while paradigms are thus enabling, they are also constraining.

From the above quotation by Lincoln and Guba it can be conspicuously seen that research paradigm is our individual inner feeling and understanding on the way phenomena is, in the natural way. Patton (1978:203) further elaborated that a paradigm is a world view, a general perspectives, a way of breaking down the complexity of the real world. As such paradigms are deeply embedded in the socialization of adherents and practitioners: paradigm tells them what is important, legitimate and reasonable. Paradigms are also normative, telling the practitioner what to do without the necessity of long existential or epistemological considerations. But -it is
this aspect of paradigms that constitutes both their strengths and their weakness—their strength in that it makes action possible, their weakness in that the very reason for action is hidden in the unquestioned assumptions of the paradigm. (Patton 1978).

To make it clear, research paradigm is a philosophical perspective that originates the schools of thought in research process. Lincoln and Guba (1998:218) further claimed that ‘paradigm issues are crucial, no inquirer ought to go about the business of inquiry without being clear about just what paradigm inform and guides to his approach. According to Lincoln and Guba (1985), there are three major questions that help us to define a research paradigm: the ontological questions, the epistemological questions and methodological questions.

**Ontology:** is the nature of reality

**Epistemology:** is the philosophy of how we can know the reality

**Methodology:** is the practice of how we come to know the reality (Pickard, 2007)

It is the answer to these questions that the three schools of thought are established, these are:

- **Positivist school of thought:** Positivism may be defined ‘as a family of philosophers characterized by an extremely positive evaluation of science and scientific method of enquiry (Reese, 1980: 450).

- **Post positivist school of thought:** post positivism reflects a deterministic philosophy in which causes probably determine action. Thus, the problems studied by post positivists reflect a need to examine causes that influence outcomes, such as issues examine in experiments. (Creswell, 2003:7).

- **Interpretivist / constructionists/paragramatic school of thought:** Interpretivism or naturalistic inquiry belief that realities are multiple, constructed and holistic. They are on the assumptions that individual seek understanding of the world in which they live and work. They develop subjective meanings of their experiences --- meanings directed towards certain objects. (Creswell, 2003:8).

**Research Methodology**

Is the theoretical perspective of the research process. According to Pickard (2007) theory means the perspectives or approach in which the researcher wants to follow to address his/her research problems or questions. Furthermore, theoretical perspectives denote the type of approach or methodology that the researcher is comfortable with, to address research problem. Crotty (1998) indicates that methodology is way of choosing a process or design lying behind the choice and use of particular research methods and linking the choice and use of methods to the desired outcomes. After all, a research methodology is an approach that guides a researcher in choosing the appropriate methods and shapes the use of methods chosen (Crotty 1998). For instance Symbolic interactionalism is a theoretical perspective that informs the range of methodology to use in addressing your research problems.

According to Webster’s International dictionary Methodology is defined as
- "the analysis of the principles of methods, rules, and postulates employed by a discipline";
- "the systematic study of methods that are, can be, or have been applied within a discipline"; or
- "a particular procedure or set of procedures."
Methodology includes the following concepts as they relate to a particular discipline or field of inquiry: a collection of theories, concepts or ideas; comparative study of different approaches; and critique of the individual methods” (Wikipedia encyclopedia 2008).

A research methodology defines what the activity of research is, how to proceed, how to measure progress and what constitutes success. Methodology refers to more than a simple set of methods; rather it refers to the rationale and the philosophical assumptions that underlie a particular study. This is why scholarly literature often includes a section on the methodology of the researchers. Methodology might explain what the researchers’ ontological or epistemological views are (Wikipedia encyclopedias 2008).

Methodology is a science of studying how research process is done scientifically. It is a way to systematically solve research problem by logically adopting various methods. Methodology helps the researchers to understand not to only the product of scientific inquiry but the process itself. It aims to describe and analyse methods, throw light on their limitations and resources, clarify their presuppositions to the twilight zone at the frontiers of knowledge.

Methodology entails the procedures by which research process, whether quantitative and qualitative, are conducted and ultimately evaluated. There are generally two types of research methodology that are used to address research problem these are quantitative or qualitative methodology to collect and analyse data, with one just emerging in the last two decades, which most of the people do not give attention to. (i.e. mixed method). The theoretical perspectives of psychologists all contributed to a research approach that tends to be quantitative, qualitative or mixed method. The definitions of these methodologies will help us further clarify the three methodologies.

1. Quantitative research methodology: is the type of methodology in which researchers solely uses positivist or post-positivist theoretical assumptions (i.e. is the type of methodology that uses number that can be quantified, which also have cause and effect thinking, employs strategies of inquiry such as experiment and survey, uses method of reduction and observation and test of theories). All these types of strategies are used in quantitative methodology to collect data on predetermined instruments that would yield statistical data.

**Assumptions**

Reality is objective, “out there,” and independent of the researcher -- therefore reality is something that can be studied objectively; the researcher should remain distant and independent of what is being researched; the values of the researcher do not interfere with, or become part of, the research -- research is value-free; research is based primarily on deductive forms of logic and theories and hypotheses are tested in a cause-effect order; and the goal is to develop generalizations that contribute to theory that enable the researcher to predict, explain, and understand some phenomenon. (Creswell, 1994)

From the above assumptions quantitative research can be seen as an inquiry into an identified problem, based on testing a theory, measured with numbers, and analyzed using statistical techniques. The goal of quantitative methods is to determine whether the predictive generalizations of a theory hold true.
The major/ common types of quantitative research methods

Descriptive
Descriptive research involves collecting data in order to test hypotheses or answer questions concerning the current status of the subjects of the study. It determines and reports the way things are.

Correlational
Correlational research attempts to determine whether and to what degree a relationship exists between two or more quantifiable variables. However, it never establishes a cause-effect relationship. The relationship is expressed by correlation coefficient, which is a number between .00 and 1.00.

Cause-comparative
Causal-comparative research: establishes the cause-effect relationship, compares the relationship, but the cause is not manipulated, such as "gender."
Experimental: Experimental research establishes the cause-effect relationship and does the comparison, but the cause is manipulated. The cause, independent variable makes the difference. The effect, dependent variable is dependent on the independent variable.
Surveys: Surveys include cross-sectional and longitudinal studies using questionnaires or interviews for data collection with the intent of estimating the characteristics of a large population of interest based on a smaller sample from that population.

2. Qualitative research methodology: this is the type of methodology in which the researcher solely claims his approach from constructivist, interpretivist, and naturalistic inquiry etc. theoretical assumptions. (i.e. is the type of methodology that employs the multiple meanings of individual and their experiences with the intent to a model or theory). It also uses the theoretical assumption of advocacy/ participatory perspective to study a phenomenon. i.e. It suggest strategies such as case study, ethnography, phenomenology, grounded theory, and action research etc. in this type of methodology the researcher collets data using open ended with the intent to develop themes from the data.

Assumptions

Multiple realities exist in any given situation -- the researcher's, those of the individuals being investigated, and the reader or audience interpreting the results; these multiple perspectives, or voices, of informants (i.e., subjects) are included in the study;

- The researcher interacts with those he studies and actively works to minimize the distance between the researcher and those being researched;
- The researcher explicitly recognizes and acknowledges the value-laden nature of the research;
- Research is context-bound;
- Research is based on inductive forms of logic; categories of interest emerge from informants (subjects), rather than being identified a priori by the researcher;
- The goal is to uncover and discover patterns or theories that help explain a phenomenon of interest; and
- Determinations of accuracy involve verifying the information with informants or "triangulating" among different sources of information (e.g., collecting information from different sources).
From the assumptions listed above qualitative methodology can be seen as a process of inquiry that has the goal of understanding a social or human problem from multiple perspectives. Qualitative research is conducted in a natural setting and involves a process of building a complex and holistic picture of the phenomenon of interest.

### The major/ common types of Qualitative Research Method

**Case Studies:** In a case study the researcher explores a single entity or phenomenon (‘the case’) bounded by time and activity (e.g., a program, event, institution or social group) and collects detailed information through a variety of data.

The case study is a descriptive record of an individual's experiences and/or behaviours kept by an outside observer.

**Ethnographic Studies:** In ethnographic research, the researcher studies an intact cultural group in a natural setting over a specific period of time. A cultural group can be any group of individuals who share a common social experience, location, or other social characteristic of interest -- this could range from an ethnographic study of rape victims in crisis shelters, to children in foster care, to a study of a cultural group in Africa.

**Phenomenological Studies:** In a phenomenological study, human experiences are examined through the detailed description of the people being studied -- the goal is to understand the ‘lived experience’ of the individuals being studied. This approach involves researching a small group of people intensively over a long period of time.

**Historical Studies:** Systematic collection and objective evaluation of data related to past occurrences in order to test hypotheses concerning causes, effects or trends of these events that may help to explain present events and anticipate future events.

**Grounded Theory:** Theory is developed inductively from a corpus of data acquired by a participant-observer.

3. **Mixed Method:** is the type methodology that combines the qualitative and quantitative methodology together which is based on the pragmatic theoretical assumptions (i.e. problem centered, and pluralistic in nature) this type of methodology employ strategies of inquiry to collect data either simultaneously or sequentially, to address the research problem. In this approach the data collection also involves gathering of both numerical as well text information. (Creswell, & Plano Clarke, 2007)

From the above discussion it can be categorically seen that there is a difference between research paradigm and research methodology which should be taken into consideration by the researchers and students especially beginners. As Pickard (2007) noted that there is no doubt that a research paradigm implies a research methodology. This shows that paradigm is the root of methodology; it has to come first in the mind of the research before thinking towards the appropriate methodology is made.

The Table below explains the differences between research paradigm and research methodology.

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Research Paradigm</th>
<th>Research Methodology</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Positivist school</td>
<td>Quantitative</td>
<td>Realism</td>
</tr>
<tr>
<td>2</td>
<td>Postpositivist School</td>
<td>Quantitative</td>
<td>Critical realism</td>
</tr>
<tr>
<td>3</td>
<td>Interpretivist/constructivist/</td>
<td>Qualitative</td>
<td>Relativism</td>
</tr>
<tr>
<td></td>
<td>Natural inquiry School etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pragmatic School</td>
<td>Mixed method</td>
<td>Pluralism</td>
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</tbody>
</table>
Table (1) indicates the differences between the two research terminologies (i.e. paradigm vs. methodology) as it can be seen that positivist and postpositivist thinking is associated with quantitative research methodology (realism and critical realism respectively), while Interpretivist/ constructivist/ natural inquiry thinking are associated with qualitative research methodology (relativism) and Pragmatic thinking is associated with mixed methodology, the combination of qualitative and quantitative (Pluralism, dualism).

**Methodology versus Methods**

The second category of the dilemma or disparities is in the area of research methodology and research methods. As stated earlier that research methodology is a theoretical perspective denoting the overall nature of research process, meaning that is an approach that the researcher wishes to follow in order to address his research problems. Researchers and students most a times used research methodology to mean research methods because this how they found them to be in most of the research books that are written from different disciplines such as Social sciences, education, sociology, communication etc. most of all these books do not clearly or categorically explained these terms in such a way students and researchers will be able to differentiate between the two terminologies, as such they are applying both the terminologies to mean the same.

In a clear manner methodology is an approach while research method is a strategy or pattern that the researcher can follow to investigate a problem. Therefore methodology is the mother of research methods even though Pickard (2007) indicated that methodology does not necessary imply a particular research method, but it is a perspective, i.e. or the angle in which the researcher wishes to take on the question being asked.

Research Method: on the other hand, research methods denotes actual strategy, pattern adopted by the researcher to begin or engage on the empirical investigation. The term method according Piccard (2007) means the models of the research process in which the research chooses to follow and design his research process. Similarly research method is directly connected to a problem statement and goal of research. Because the research goal and problem may vary, different methods of research can be utilized. There are several strategies that can be adopted by the researcher namely: survey, case study, experimental, grounded theory, Delphi, historical, ethnography, phenomenology, action research, to mention but a few.

The Table below indicates how methodology informs or explains the choice of research methods.

<table>
<thead>
<tr>
<th>S/no.</th>
<th>Methodology</th>
<th>Method of inquiry</th>
<th>Research Methods</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quantitative</td>
<td>Experimental designs and Non Experimental Designs. (realism)</td>
<td>Survey, Experimental, correlational, Longitudinal, ex post factor, etc.</td>
<td>Deductive (test of theories and models)</td>
</tr>
<tr>
<td>2</td>
<td>Qualitative</td>
<td>Narrative, experience, behaviour (relativism)</td>
<td>Case studies, historical, Action research, Grounded theory, Ethnographies, etc.</td>
<td>Inductive (establishment of the theories and models)</td>
</tr>
<tr>
<td>3</td>
<td>Mixed method</td>
<td>Sequential, concurrent, and transformative</td>
<td>Combination of qualitative and quantitative techniques</td>
<td>Both inductive and deductive approaches</td>
</tr>
</tbody>
</table>
From the above, we can see that methodology denotes a model, pattern and plan of action process or design lying behind the choice and use of particular research methods and linking the choice and use of the methods to the desired outcomes (Crotty 1998). While a research method is a strategy, pattern that a research used to investigate a phenomenon related to the research questions or hypothesis. In a nutshell methodology is theoretical perspectives that explain to the researcher the type of research methods to be engaged in investigating a problem through the method of inquiry.

**Methods versus Techniques**

The third category of dilemma is with regards to the methods and techniques. Most of the literatures in the research process often use methods as techniques or techniques as methods. As it has been stated earlier that research method is a strategy that a researcher adopts to investigate or solve a problem.

Research Techniques: Research techniques allow us to systematically collect information about our objects of study (people, objects, phenomena) and about the settings in which they occur. In the collection of data we have to be systematic. If data are collected haphazardly, it will be difficult to answer our research questions in a conclusive way. Research techniques are not necessarily and directly associated with the specific research method. As said by Pickard (2007) that very often particular technique for empirical data presented as if they are synonymous with particular research method. Your choice of research does not necessarily restrict you to a particular technique for the collection of empirical data, although some times this may be the case. This is usually because a particular technique is the most commonly applied, not because is the only choice available.

On the other hand research method is only a specific strategies that a researcher designs to start investigating the problem or phenomena as such a single research method may include multiple research techniques or a single techniques, all depends on the needs, requirements and data that the researcher seeks to collect for analysis coupled with type of methodology is aiming at. Pickard (2007) stated that there is no rigidly prescribed combination; it is up to the researcher, his topic and his study population.

The Table below shows the differences between Research methods and techniques

<table>
<thead>
<tr>
<th>S/no.</th>
<th>Research Methods</th>
<th>Research Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Experimental</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>2</td>
<td>Survey</td>
<td>Interviews</td>
</tr>
<tr>
<td>3</td>
<td>Case study</td>
<td>Experimentation</td>
</tr>
<tr>
<td>4</td>
<td>Historical</td>
<td>Focus group</td>
</tr>
<tr>
<td>5</td>
<td>Action research</td>
<td>Observation</td>
</tr>
<tr>
<td>5</td>
<td>Delphi</td>
<td>Content analysis</td>
</tr>
<tr>
<td>6</td>
<td>Grounded theory</td>
<td>Usability testing</td>
</tr>
<tr>
<td>7</td>
<td>Ethnographic</td>
<td>Diaries</td>
</tr>
<tr>
<td>8</td>
<td>Phenomenological</td>
<td></td>
</tr>
</tbody>
</table>

From above table it can be seen that research methods are different from research techniques even though some writers and researchers tends to use each terminologies to mean same thing (i.e. some believe that research method is same with research techniques). In effect, research techniques as said earlier are individual techniques, system that deal with the collection of empirical data. In addition to this, techniques are not necessarily associated with specific
research methods, any techniques can be used in any of the research method depending on the researchers’ interest and the type of data needed to be collected.

Pickard (2007) mentioned that, understanding and interpretation of a selection of data collection techniques one has to consider research questions, research focus, data sources and one’s life experiences and make the selection of the technique based on the best fit for purpose. As research is a continuous process we have to learn by trying and adapting what tools or techniques we have, by using them to suit other research methods, we cannot accept that as a reason to say this techniques is only appropriate to this method because it has been used for hundred of years, as such we cannot take the risk by using it to another method. Success and failures in research are very tenuous concepts, therefore finding out what does not work can be as useful as finding out what other can (Pickard, 2007). It may be said that any single research method can apply more than one technique or multiple techniques depending on the data you are need to collect, but planning a head is the important and secret to success of any research.

**Chronology and Hierarchy of Research Process**

The use of research terminologies by different authors is adding confusion to the new researchers, because these terminologies are far from consistent in most of the research literature. However, students and researchers on frequent basis find the same terms used in a number of ways, some times even contradictory (Cortty, 1998).

Certainly, to suit all purposes of investigation, it can be said that any philosophical perspectives could make use of the theoretical perspectives, and also any theoretical perspectives could make use of the methodologies, likewise any of the methodology can make use of any of the research methods. To make the chronological or hierarchical patterns or succession of events in research for better and easier understanding by new comers the order may need to be drawn from top to down line of action. People's a times do not follow the chain generally in their research process. The figure below explains the research process hieratical order graphically.
It is important to recognize that systematic observation and testing can be accomplished using a wide variety of methods. Many people think of scientific inquiry strictly in terms of laboratory experimentation. However, it is neither possible nor desirable to study all phenomena of interest under controlled laboratory conditions. The design of any study begins with the selection of a topic and a research methodology. These initial decisions reflect assumptions about the social world, how science should be conducted and what constitutes legitimate problems, solutions and criteria of "proof." Different approaches to research encompass both theory and method. In addition, it is important to be able to identify and understand the research approach underlying any given study because the selection of a research approach influences the questions asked, the methods chosen, the statistical analyses used, the inferences made, and the ultimate goal of the research. Crotty, (1998) clearly stated that we typically start with a real life issue that needs to be addressed, a problem that needs to be solved, a question that need to be answered. We plan our research internms of that issue or problem. Having this notion in mind, lead to confusion in the process, why because we loose tract in our thinking of the process to follow as our guideline line for research. Figure below explain the guide line to follow in the research process.
Fig. 2. Research Process guideline.

<table>
<thead>
<tr>
<th>Research Paradigm</th>
<th>Philosophical Perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Methodology</td>
<td>Theoretical Perspectives</td>
</tr>
<tr>
<td>Research Method</td>
<td>Specific strategy or Patterns to adopt</td>
</tr>
<tr>
<td>Research Technique</td>
<td>Procedures, Ways</td>
</tr>
<tr>
<td>Research Techniques</td>
<td>Tools, implements, Devices</td>
</tr>
</tbody>
</table>

**Conclusion**

For the general understanding of research process, one needs to have a clear understanding of research process, we needs of course to justify our chosen methodology and methods. In the end we want out comes to merit respect. We want our researches, findings and conclusions to be recognised. We want other researchers and students benefit from our research process and recognise it as sound research. We need our conclusion to stand up and be understandable and reflect the light of truth or reality. This will mean that we are after objective, valid and generalizable conclusion on the outcome of our research. Achieving this, tend to be difficult task, because understanding of this process as Crotty (1998) stated that the best of our outcomes will be suggestive rather conclusive. To be positivist or non-positivist, therefore, we need to be concerned about the process we should engage in, we need to take that process out for scrutiny of the observer, we need to defend that process as a form of human inquiry that should be taken seriously. It is this situation that send us to theoretical perspectives and epistemology that calls upon to expand them incisively from methodology to methods.

The selection of which research approach is appropriate in any given study should be based upon the problem of interest, resources available, the skills and training of the researcher, and the audience for the research. Although some research may incorporate both quantitative and qualitative methodologies, in their ‘pure’ form there are significant differences in the assumptions underlying these approaches, as well as in the data collection and analysis procedures used.

**References**


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