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RESEARCH PARADIGMS: THEIR ASSUMPTIONS AND RELEVANCE

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Abstract

The fundamentally philosophical question, 'what is the stance of the researcher when conducting research?' has led to the evolution of several research paradigms. A paradigm can be defined as a collection of logically related assumptions, concepts or propositions that orient thinking and research. Ontology, Epistemology and Methodology are the main foundational constructs of a paradigm. Every construct of each paradigm has different connotations, depending on the underpinning theoretical framework. This paper discusses three major research paradigms: Positivism, Interpretivism and the more recent Mixed Methods which can be loosely called as the pragmatist approach and aptly described as 'selecting the best of various ideas'. An attempt has been made to give a comprehensive and detailed account of the three philosophical stances on the basis of their essential elements, strengths and limitations. Comparing the three it can be said that mixed methods research offers great promise for practicing researchers.

Keywords: *Research Paradigms, Positivism, Interpretivism, Mixed methods*

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Introduction

Research is a systematic method of gaining new information, or a way to answer questions. Cohen et al (2011) define research as a systematic and controlled enquiry through which data are collected, analysed and interpreted to eliminate difficulties and improve conditions. This systematic orientation has generated a number of approaches and methodologies in research under the umbrella of different 'paradigms'.

The concept of the term 'paradigm' was introduced by Kuhn in his book, 'The Structure of Scientific Revolutions'. He defines a paradigm as, "..... an integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools ..... a paradigm gathers into itself a community of investigators. By showing information within itself, the community gives itself intellectual and social support. It tends not to communicate with investigators who follow different paradigms. Citation of others' work is frequent within a paradigm but much less frequent, perhaps non-existent across paradigms. Hence, the followers of a paradigm tend to have their own journals, scientific societies and meetings, because the paradigm has won their allegiance to an integral set of concepts, variables, problems and methods".

A research paradigm is a 'cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, how results should be interpreted and so on' (Bryman, 1992). Therefore, a paradigm implies the philosophical positions of researchers about the nature of matter, what can be known and how this knowledge can be attained. Naughton et al in Mackenzie & Knipe (2006) identified three components of a paradigm; a belief about the nature of knowledge, a methodology and criteria for validity. So, three terminologies demonstrate the foundational constructs of a research paradigm. Guba and Lincoln (1994) identified these three terminologies in the form of three questions that help define a paradigm, that is the ontological, the epistemological, and the methodological:

- The ontological question asks, what is the nature of the 'knowable'? Or what is the nature of reality?

- The epistemological question asks, what is the nature of knowledge and the relationship between the knower and the known or the knowledge?
- The methodological question asks; how can the knower go about obtaining the knowledge?

To sum up, a paradigm consists of at least three elements: ONTOLOGY, EPISTEMOLOGY and METHODOLOGY. However, every construct of each paradigm has different connotations, depending on the underpinning theoretical framework. This will be discussed in relation to three major research paradigms: the positivistic, the interpretive and mixed methods.

Positivism (Analytic-Empirical-Positivistic-Quantitative Paradigm)

Positivism is a stretched terminology of the 'positive' science and 'positive' philosophy which appeared in Francis Bacon's writings in the 16th century (Crotty, 1998). However, August Comte is considered its founder and populariser. It is based on the universality of laws and emphasizes the existence of common reality on which people can agree. Positivism contends that these realities are meaningful as long as they are observable, replicable and verifiable (Anderson, 1998). Positivism is also known as the 'scientific method' because it gives emphasis to the position that the social world should be studied the way that physical phenomenon are studied. Moreover, the methods and procedures applicable in natural sciences can be utilized in social sciences. Comparatively, positivism accepts a posited direct experience and verifiable knowledge, but rejects whatever is abstract and subjective (Crotty, 1998). Logical positivists 'give meaning to statements by methods of its verification' and that researchers observe human behaviour as external, repetitive and predictable by forming hypotheses and applying scientific methods to form law like generalizations (Cohen et al, 2011).

The ontological assumptions underpinning positivism pertain to the existence of independent realities outside the mind (Crotty, 1998). Objectivism is the term generally used to describe the ontological stance of positivism. Positivism claims that researchers in social science should consider concepts as objective and 'real' so that they can be deemed verifiable (Cohen et al, 2011).

Realism, the epistemological assumption of positivism holds that meanings reside within entities as objective truth and independent of the human mind (Crotty, 1998). It is implied that

researchers should strive to detach themselves from the reality under investigation and distance themselves from those being studied in order to prevent or minimise researcher's bias. Therefore, positivists claim that the researcher seeks to explain the reality by means of objective observation, verification and measurement (Anderson, 1998)

In summary, positivists emphasize objectivity when discovering reality. This stance informs methodologies as part of the overall design in the process of inquiry. Empirically speaking, quantitative research aims at theory testing. Positivists begin their research process by formulating hypotheses which are tentative suppositions derived from previous theories. Hypotheses inform congruent data collection methods and analysis to check whether findings confirm or contradict that theory. Empiricism is the terminology that represents the quantitative methodological approaches and designs in social sciences.

Positivists assume that they can produce scientific explanation of the occurrence of events by implementing quantitative approaches or methods of data collection and analysis through experiment and observation causality principles (Mackenzie & Knipe, 2006). The tenets of positivism then emphasize the fact that knowledge is observable and therefore measurable in ways identical or, to a lesser extent, similar to pure scientific experiments, i.e., truth can be verified via scientific methods. Quantitative methodologies define the approaches which inform data collection methods and analyses.

Keeping in view the distinguishing characteristics of quantitative research following are the main methodologiesused in it:

1. Descriptive Survey Research - This type of research attempts to answer questions about the current status of a phenomenon under study. Usually it involves studying theattitudes, opinions, preferences, practices, concerns or interests of some group of people.
2. Correlational Research - These studies are conducted to determine whether and to what degree, a relationship exists between two or more variables.
3. Causal - Comparative Research - This type of research seeks to discover a cause-effect relationship between two or more different programmes, methods or groups. It is also called the

ex-post facto research because in this type, the researcher usually does not have control over the causal factor or it is studied after the occurrence of the fact.

4. Experimental Research - This also looks for a cause-effect relationship between two or more variables, but this relationship is studied under controlled conditions. Various types of experimental designs are used in conducting experimental research. The selection and use of a particular experimental design depends upon the nature of the problem and its objective.

Strengths of Positivism

- The results are statistically reliable. It uses mostly statistical methods in drawing comparisons between concepts, ideas, products, etc.
- It involves quantification based on numbers. Thus it is well suited to address 'Who', 'What', 'When' and 'Where' of individual behaviour.
- It studies large number of people at a time; therefore,its findings can be generalized to the whole population.
- There is less risk of researcher's bias.

Limitations of Positivism

- It uses quantitative data which are close-ended and hence do not provide depth and detail.
- It can only be applied to phenomenon that is stable across, time space and context. Human affairs keep changing therefore it is not appropriate in social sciences.
- It presupposes that all events are fully determined by one or more causes.
- It aims to generalize findings thereby increasing the risk of neglecting individuals whose understandings and interpretation can reveal plenty of truths about reality.

Interpretivism (Constructivist-Hermeneutic-Interpretivist-Qualitative Paradigm)

Interpretivism has come to light after the withering criticisms that have been levelled at positivism in the 1960s; mainly its ignorance of the social factors that distinguish human beings. The founder of interpretivism, Max Weber, a German sociologist, greatly influenced the social theory by refuting positivism and substituting scientific with social philosophies in meaning construction (Crotty, 1998). Unlike positivists, interpretivists are concerned with 'understanding the subjective world of the human experiences' (Cohen et al, 2011). Human behaviours cannot be explained by merely implementing methods of natural sciences. Rather, as part of our consciousness and due to our interaction with the world in which we live, behaviours can be

understood by researchers only via those who perform them and the context in which they occur. Thus, interpretive researchers concentrate on qualitative rather than quantitative aspects or relationships (Wellen & Fraenkel, 2001).

Subjectivism (or relativism) as the ontological stance of interpretivism views reality as multiple and relative, a single phenomenon can have multiple interpretations and there is no basic process by which truth can be determined. They aim to get a deeper understanding of the phenomenon and its complexity in its unique context and not to generalise it to a whole population.

As far as epistemology is concerned, constructionism is the term that generally represents interpretivists' philosophical stance. Interpretivists believe that knowledge is constructed via participation. That is to say, participants are considered active knowers who understand and reflect on the social phenomenon. Researchers can mutually attain an understanding of the phenomenon under investigation by interpreting the intentions of those involved (Cohen et al, 2011). Interpretivists do not generally begin with a theory or hypothesis, rather 'they generate hypothesis or inductively develop a theory or pattern of meanings' (Creswell 2007) throughout the research process. They treat people as participants and not as objects. They try to capture different perspectives and look at the phenomenon from different angles. Additionally, researchers work as part of rather than detached from the research, where 'knowledge is jointly constructed between researchers and their collaborators' (Dunne et al 2005).

Qualitative research aims to understand and uncover what is going on in a social context. Hence, it is concerned with observing and interpreting reality with the aim of developing a theory that will explain what was experienced. The essence of research depends on the situation being studied. Therefore, the research has no specific structure. Rather it may change overtime according to the emergent phenomenon.

Interpretive researchers implement a methodology that allows the researcher to conduct a study in its natural setting. They use approaches that allow them to obtain personal contact with the group being studied in order to attain an insider's view.
Some common methodologies used in qualitative research are:

1. Phenomenology-The term was developed by Hussler (1970) and refers to the raw knowledge we have about a situation an idea or an experience. It is the descriptive study of how individuals experience a phenomenon. The researcher has to gain access to individuals' 'life worlds' which is their world of experiences, it is where consciousness exists.

2. Ethnography-literally means 'description of people or cultures'. It is crucial for ethnographers to understand the social behaviour from the perspective of the research participants. As a methodology it gives the researcher the chance to gain deeper insight into the lives of the studied groups of individuals to 'realise their vision of their world'.

3. Case Study - It is one of the most common methodologies used by interpretevists which focuses on individual cases in their natural course of action, to be studied in depth and detail. It is taken to examine a social unit as a whole. It aims at uncovering the reason behind the occurrence of a thing and discovering the interrelated factors. Since the roots of case study are interdisciplinary,many different concepts and theories are used to describe and explain the case.

4. Grounded theory - The focus here is on the development of inductive, 'bottom up' theory that is 'grounded' directly in the empirical data. This approach is usually used to generate theories which tell us 'how' and 'why' something operates as it does. These theories provide explanations about the phenomenon.

Strengths of Interpretivism

- It studies phenomenon in holistic perspective and in its natural setting thus providing detailed and in-depth answers to research questions.
- It is exploratory and not confirmatory.
- It is most suitable for study of human behaviour which is fluid, dynamic, contextual, situational, social and personal.
- It uses flexible designs and helps researcher adjust the direction of the research process.
- Researcher is in direct and close contact to the people, situation and phenomenon under study.

Limitations of Interpretivism

- Subjective bias is a constant threat to objective data gathering tools and analysis techniques.
- Pure subjectivity in selection of samples undermines their credibility.

- The findings of qualitative research lack generalization because of the nature and size of samples.

Mixed Methods (Eclectic- Mixed Methods- Pragmatic Paradigm)

The 'paradigm wars' (Gage, 1989) in which one stood by ones allegiance to quantitative or qualitative methodologies and which sanctioned the rise of qualitative research and the partial eclipse of solely numerical methods have given way to 'mixed methods' research. Mixed methods research is 'a research parable whose time has come' (Johnson & Onwuegbuzie, 2004). As a comparatively young discipline mixed methods research has a range of different definitions. It is formally defined as 'the class of research where the researcher mixes or combines qualitative and quantitative research techniques, methods, approaches, concepts or language into a single study'. Philosophically, it is the 'third wave' a third research movement that moves past the paradigm wars by offering a logical and practical alternative. It makes use of the pragmatic method and system of philosophy. Its logic of inquiry includes the use of induction,deduction and abduction. It draws on, and integrates numeric and narrative approaches and data as necessary and relevant to meet the needs of the research in order to answer research questions fully. Mixed methods approaches are premised on pragmatism ontologies and epistemologies. It advocates the pragmatic method of classical pragmatists like Charles Sanders Pierce, William James and John Dewey as a way for researchers to think about the traditional dualisms that have been debated by purists. Taking a pragmatic and balanced or pluralist position will help improve communication among researchers from different paradigms as they attempt to advance knowledge (Maxcy, 2003).

Pragmatism adopts a methodologically eclectic, pluralistic approach to research, drawing on positivistic and interpretive epistemologies based on the applicability, and regarding reality as both objective and socially constructed (Johnson and Onwuegbuzie, 2004). Research is driven by the research questions rather than the methodological preference of the researcher. Methodology follows from the purposes and questions in the research. Bryman (2007)suggests that mixed methods researchers must write up their research in such a way that the quantitative and qualitative components are mutually illuminating.

Mixed methods approaches enable a more comprehensive understanding of the phenomenon than single method approaches, combining 'particularity' with 'generality', 'patterned regularity' with 'contextual complexity' and 'inside and outside' perspective. Onwuegbuzie and Leech (2005) argue that mixed method recognises similarities between different philosophies and epistemologies, rather than the differences that keep them apart. Mixed method research addresses both the 'what' (quantitative) and 'how' or 'why' (qualitative) types of research questions. Mixed methods research has to attend to several important decisions (Ivankova el al, 2006, Green, 2008) which are:-

- priority (whether quantitative or qualitative approaches dominate, or are given equal weight at the stages of data collection and analysis)
- Implementing/timing (whether and where quantitative or qualitative data collection and analysis occur concurrently or in seriatim).
- Integration (where or at which stages the integration of quantitative and qualitative methods occur)
- Issues (around what issues the mixed methods occur,e.g. at the levels of constructs, variables, research questions, purposes of the research)
- Independence/interaction (the extent to which different methods are conceptualized designed and implemented independently or interactively).

Teddie and Tashakkori (2009) suggested that mixed methods research can adopt different designs:

1. Parallel Mixed Designs or Concurrent Designs - are those in which both qualitative and quantitative approaches run simultaneously but independently in addressing research questions.
2. Sequential Mixed Designs -In such designs, quantitative and qualitative approaches run one after the other, as the research requires. One strand of the research or research approach determines the subsequent strand or approach and the major findings from all strands are subsequently synthesized.
3. Quasi-Mixed Designs –are those in which both quantitative and qualitative data are gathered but which are not integrated in answering a particular research question i.e. quantitative data might answer one question and qualitative another from same piece of research.

4. Conversion Mixed Designs- are those designs in which data are transformed from qualitative to quantitative and vice versa.

5. Multilevel Mixed Designs - also called Hierarchical Research Designsare those where different types of data (both quantitative and qualitative) are integrated and/or used at different levels of the research, for instance numerical data may be used at one level and qualitative data used at another level.

6. Fully Integrated Mixed Designs - In these designs mixed methods are used at each and at all stages and levels of the research.

Strengths of Mixed Methods

- Words, picture and narratives can be used to add meaning to numbers.
- Numbers can be used to add precision to words, pictures and narratives.
- It can provide quantitative and qualitative research strengths.
- It can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.
- A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study.
- It can provide stronger evidence for a conclusion through convergence and corroboration of findings.
- It can add insights and understandings that might be missed when only a single method is used.
- It can be used to increase the generalizability of the results.
- Quantitative and qualitative research are used together toproduce a more complete knowledge necessary to inform theory and practice.

Limitations of Mixed Methods

- It can be difficult for a single researcher to carry out both quantitative and qualitative researches, especially if they are to be used concurrently.
- Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
- It is more expensive and time-consuming
- It is still in developing stage and has not taken a concrete shape of a complete approach.

Conclusion:

Having comprehensively and concisely discussed the major research paradigms, the question that now arises is; which one to follow in conducting research? To begin with, there is no clear-cut answer to this question, but we can say that agency to one's belief system would probably guide taking a stand. Debates over the divergence or convergence of methodologies in research generated a robust approach known as mixed approach. This approach integrates both quantitative and qualitative methods of inquiry to be conducive to the richness and quality of evidence. It is based on pragmatism which allows for the integration of methods into a single research study. Within this paradigm, researchers can investigate the phenomenon under study from different angles to gain both depth and breadth of reality. Philosophical underpinnings of both positivistic and interpretive paradigms are distinctive and self-contained, but gaining robust and rigorous findings have more appeal than philosophical conflicts. Finally, research value depends more on pragmatic measures rather than theoretical triumph. Therefore, researchers who are confused by the so-called 'paradigm wars' might find mixed method easier to adopt.

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