

Innovations

Review of Pragmatism Paradigm in Research and Its Limitation in Mixed, Qualitative and Quantitative Research Approach

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Abstract

This paper has mapped the emergence of mixed methods research as a third methodological movement that has resulted from the tensions of the paradigm wars and is related to the philosophy of pragmatism and the notion of triangulation. This paper found that the terms quantitative and qualitative have been used in four different discourses in the literature. The first application relates to what is regarded to be the research paradigm. The second relates to what is referred to as methodology. The third refers to research design, and the last connotes the research methods. For clarity, the research paradigm is defined in this paper as a researcher's philosophical orientation, perspective, thinking, school of thought, or set of shared beliefs that influence what should be studied? how it should be studied? and how the results of the study should be interpreted? The paradigm is composed of three elements, ontology, epistemology, and axiology. there are, four common paradigms identified in the paper positivism, interpretivism/constructivism, critical paradigm/theory, and pragmatic paradigm that may be used in social sciences research. Methodology encompasses concepts such as design, strategies, procedures, and methods. Each research paradigm has different methodologies that flow appropriately from it.

Keywords: Pragmatism, Paradigm and Its Limitation

1 .Introduction

1.1 Background

The term paradigm is described as an essential collection of beliefs shared by scientists, a set of agreements about how problems are to be understood, how we view the world and thus go about conducting research thus, paradigms contain a basic set of beliefs or assumptions that guide our inquiries for particular research. There are mainly four paradigms that have been widely used in research include Positivism, Interpretive, Advocacy and Pragmatism(Rahi, 2017).

Within science studies, the consensual set of beliefs and practices that guide a field is typically referred to as a “paradigm.” Paradigms have also become a central concept in social science research methodology, but often with a meaning that is rather different from the way that term is used in the field of science studies (David L. and Morgan, 2007).

Debates over the divergence or convergence of methodologies in research generated a robust approach known as the 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 integrating 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 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 met easier to adopt (Siddiqui, 2019).

To sort out the multiple meanings and uses of the word pragmatism and paradigm, found within the social sciences, this term paper will be discussed next to the methodological process. issues raised by combining qualitative and quantitative methods and comparing them to the dominant approach. Finally, the Conclusions section considers what it might mean to go beyond the recent interest in combining methods as a practical approach to research design and apply this shift in research practices to several key issues in social science research methodology with limitations.

2. General objective

The general objective of this term paper is to assess the pragmatism paradigm in research and its limitations.

2.1 Specific objective

1. To analyze the three kinds of pragmatism and their labelled in research
2. To compare and contrast the four research paradigms and their components
3. To Explain the research paradigm and its approaches
4. To explore the rise of mixed methods of research designs
5. To identify the main limitation of mixed research design

2.2 Research question

1. what are the three kinds of pragmatism and they're labelled in research?
2. what is the difference between the four research paradigms and their components?
3. What are the research paradigms and their approaches?
4. When weremixed research methods and design raised?
5. What are the main limitations of mixed research design?

3. Significance of the study

The significance of the paper is that it is important to identify the difference between the research design to use the most appropriate design that fits the research type we are going to do. And also, clearly demarcated the difference between quantitative, qualitative, and mixed research design and their functions in the research process.

3. Methodology

All data used in this study are obtained from secondary data to attain the objectives, data collection in the systematic review article is carried out document analysis through a depth review of related literature from different sources. Furthermore, in this article data were obtained from the review of related literature on the Web of Published articles, research, books, and reports from government and non-government organizations.

3.1 Methods of data analysis and presentation

Secondary or desk research data analysis methods were used to achieve the study's general and specific objectives. The data obtained from secondary sources has been combined and presented by using Statistical methods of data analysis in the form of tables, charts, and figures.

4. Results and discussion

4.1 Three kinds of pragmatisms and they're labelled

This division into three kinds of pragmatism is made through the concept pair of knowledge and action; What kind of relations can be recognized between knowledge and action? One obvious relation is that knowledge is created and used for action. The main idea is here that knowledge should improve action; the purpose of scientific knowledge is that it should make a practical difference. This relation can be summarized as knowledge for action. This is however not the only interpretation of the role of knowledge about the action. Another important strand of thinking is that knowledge should be about actions. A third relation can be identified: Action as the source of knowledge. To reach knowledge, actions need to be arranged, conducted and studied (Goldkuhl, 2008). These three types of pragmatisms are labelled in the following way:

- Functional pragmatism (knowledge for action)
- Referential pragmatism (knowledge about action)
- Methodological pragmatism (knowledge through action)

These three types of pragmatisms are related to three foundational questions:

- *Why* knowledge? Action is the purpose!
- *What* knowledge? Action is the object!
- *How* knowledge? Action is the source and medium!

4.1.1 Functional pragmatism

In pragmatism, knowledge is seen as a means to improve the world. This is based on a view of the world still in a state of becoming. Knowledge should be *useful* for action and change. Functional means that knowledge

should be useful and applicable in action. The principal relation between knowledge and action, within functional pragmatism, is depicted in figure 1 (Goldkuhl, 2008).



Figure 1 Knowledge – action relation in functional pragmatism

This means that knowledge that has a prescriptive character, e.g., models and methods, is important in functional pragmatism. Functional knowledge gives humans guidance in their practical endeavours. Prescriptive knowledge (in methods) is often formulated with a clear reference to proposed types of actions (Goldkuhl, 2008).

4.1.2 Referential pragmatism

This kind of pragmatism is concerned with describing the world in action-oriented ways. Without action, any structure of relations between people is meaningless. To be understood, a society must be seen and grasped in terms of the action that comprises it (Blumer, 1969 p 71). A proper understanding of social issues entails thus action-oriented conceptualizations. The scientific knowledge (theories etc.) should be explicit about actions and also their context in terms of actors and conditions for and results of actions. An action-oriented view of reality includes also acknowledging larger action items as activities and practices. The principal relation between knowledge and action, within referential pragmatism, is depicted in figure 2.



Figure 2 Knowledge – action relation in referential pragmatism

Knowledge–action relation in referential pragmatism should be included in referential action theories. This list of action-oriented theories should not be seen as exhaustive (Goldkuhl, 2008).

4.1.3 Methodological pragmatism

Methodological pragmatism is based on this basic fact. The development of knowledge is based on continual interaction between knowing and acting. Knowledge is based on actions, experiences and reflections on actions. Methodological pragmatism goes one step beyond pure observation for the capture of empirical data. Intervention in the world with the particular intent to apply and test different strategies and tactics is essential in this kind of pragmatism. The principal relation between knowledge and action, within methodological pragmatism, is depicted in figure 3 (Goldkuhl, 2008).

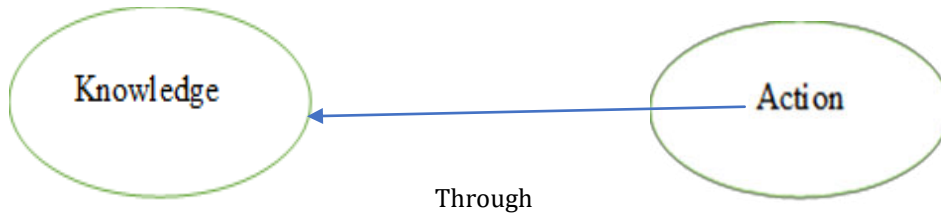


Figure 3 Knowledge – action relation in methodological pragmatism

Methodological pragmatism is adopted in action research. One key issue in action research is of course the contribution to local practice or discussion on functional pragmatism. Another key issue is the intervention and learning cycle: action planning, action-taking and evaluation. Action research involves an exploration of new strategies and tactics and evaluation of their possible success or failure (Goldkuhl, 2008).

4.1.4 Concluding reflections

The formulation of the three kinds of pragmatisms has been made through continual reflections on research from a pragmatic perspective (Goldkuhl, 2008).

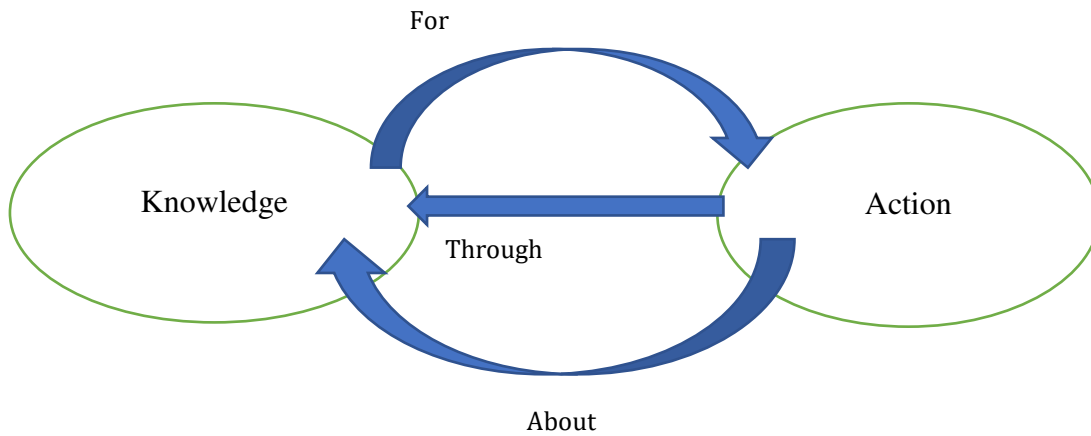


Figure 4 Knowledge – action relations in full pragmatism (Goldkuhl, 2008) sketched by the author.

4.2 Comparison of four research paradigms and their components

When spending time reading more closely about the research paradigm, you found out that much of the discussion in education and social research methods have focused on the difference between qualitative and quantitative research (Tuyet, 2016).

Table 4.1: Comparison of four research paradigms and their components

| Paradigm | Positivist | Interpretivist | Critical | Pragmatic |
|--------------------------|---|---|--|---|
| Ontology | Naïve realism Single reality | Relativist Multiple realities | Historical realism Multiple realities | Relational Non-singular reality |
| Epistemology | Objective | Subjective | Transactional / subjective | Objective -subjective Either or both depending upon the research question(s) |
| Axiology | Value-free | Value laden, biased and balanced | Value laden, biased and culture-sensitive | Value-driven, both objective and subjective stance |
| Methodology | Experimental-methodology Quasi-experimental Correlational Causal-comparative Randomized control trials | Phenomenology Symbolic-interactionism Ethnomethodology Narrative-inquiry Hermeneutics Action research | Feminist theory Neo-Marxist Cultural studies Action research Disability theories Queer theory Participatory-inquiry Ideology-critique | Mixed-methodology: Experimental-methodology Quasi-experimental methodology Phenomenology Narrative inquiry Action research |
| Design | Descriptive Explanatory Survey Case Study Longitudinal Cross-sectional | Descriptive Exploratory Ethnography Grounded Theory Case Study Longitudinal Cross-sectional | Descriptive Exploratory Ethnography Grounded Theory Case Study Longitudinal Cross-sectional | Descriptive Explanatory Exploratory Ethnography Grounded Theory Case Study Longitudinal Cross-sectional |
| Method (most often used) | Quantitative Highly structured (Questionnaires) Tests Observations Document Analysis Large Samples Hypothesis testing Random sampling Statistical analysis | Qualitative In-depth investigations (Semi-structured interviews, or in-depth unstructured interviews and observations) Document analysis of small samples and purposive sampling | Qualitative or quantitative (mostly qualitative) Interviews Participants 'observation Questionnaires Triangulation of methods | Mixed-method Quantitative and qualitative (combine both methods) |

Table Source, (Saunders, M., Lewis. et al, 2009; Kivunja, & Kuyini,, 20017)

4.2.1 The positivist paradigm

The supporters of this paradigm believe that true knowledge can be obtained through observation and experiment. So, Positivists normally select a scientific method to produce knowledge. Positivism is also called Scientific Method, Empirical Science, Post Positivism and Quantitative Research. Rahi et al discussed that in positivism reality remains stable and can be observed or described through an objective. A strong debate is available on the issue of using a positivist paradigm and whether it is appropriate for social sciences or not (Rahi, 2017).

4.2.2 The interpretive paradigm

The supporter of the interpretive paradigm believes in the deep understanding of a concept and explores the understanding of the world in which they live. They develop subjective meanings of their experiences or towards certain objects or things. This paradigm is also called Constructivism, Social Constructivism or Qualitative Research paradigm. Interpretive believe that true knowledge can only be obtained by deep interpretation of a subject (Rahi, 2017).

4.2.3 The advocacy/participatory paradigm

The supporters of the advocacy paradigm claim knowledge through an advocacy paradigm. This paradigm is also known as a critical paradigm. A debate started during the 1980s and 1990s among individuals who felt that the positivist paradigm does not adequately address social and political issues. These researchers believe that inquiry needs to be entangled with political and social issues. In accession, this research should contain the agenda of reform that ultimately address the issues of empowerment, inequality, oppression, domination, suppression, and alienation (Rahi, 2017).

4.2.4 Philosophical assumptions

There are seven different philosophical assumptions: ontology, Epistemology, Axiology, Rhetoric, Methodology, Strategies of Inquiry and Methods that follow all four paradigms. Ontology deals with the nature of reality about the concept of knowledge whereas Epistemology deals with the connection between the researcher and that being researched (Johnson, & Christensen, 2017).

4.3 Research Paradigms and their approaches

A research paradigm is simply known as the philosophical foundation or framework of research work. It is also termed a comprehensive belief system and worldview that guides the researcher to frame his/her research process in a certain pattern. To make clear, the research paradigm explicitly states the researcher's positions on the ontology, epistemology, methodology and axiology of his/her research work. This philosophical positioning of the researcher becomes a philosophical dimension of his/her research. The philosophical base of the research guides the researcher to precede the entire process and derive meaning from the researched phenomenon. Therefore, the knowledge of research is essential for the researcher to create his/her research philosophy (Kumar, 2020).

4.3.1 Three approaches to research

The knowledge claims, strategies, and methods all contribute to a research approach that tends to be more quantitative, qualitative, or mixed. Definitions can help further clarify the three approaches (Creswel, 2003).

A quantitative approach is one in which the investigator primarily uses postpositivist claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data (Creswel, 2003).

Alternatively, a qualitative approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences, meanings socially and historically constructed. with the intent of developing a theory or pattern. It also uses strategies of inquiry such as narratives, phenomenology, ethnographies, grounded theory studies, or case studies. The researcher collects open-ended. emerging data with the primary intent of developing themes from the data (Creswel, 2003).

Finally, a mixed-methods approach is one in which the researcher tends to base knowledge claims on pragmatic grounds (e.g., consequence-oriented, problem-centre, and pluralistic). It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems (Creswel, 2003).

Mixed methods approach: pragmatic knowledge claims, collection of both quantitative and qualitative data sequentially the researcher bases the inquiry on the assumption that collecting diverse types of data best provides an understanding of a research problem. The study begins with a broad survey to generalize results to a population and then focuses, in a second phase, on detailed qualitative, open-ended interviews to collect detailed views from participants. (Creswel, 2003).

A mixed methods research design is a procedure for collecting, analyzing, and “mixing” both quantitative and qualitative research and methods in a single study to understand a research problem. To utilize this design effectively, you must understand *both* quantitative and qualitative research philosophical approaches (Creswel, 2012).

4.4 The rise of mixed methods research designs

Mixed method research has a short history as an identifiable methodological movement that can be traced to the early 1980s and has been described as a ‘quiet’ revolution due to its focus on resolving tensions between the qualitative and quantitative methodological movements (Tashakkori, A and Teddlie, 2010). Mixed-Method studies have emerged from the paradigm wars between qualitative and quantitative research approaches to become a widely used mode of inquiry (Steven R and Terrell, 2012).

Mixed methodologies are an emerging area with a growing amount of interest across several discipline areas and have been particularly popular in the areas of applied social research. (Teddlie & Tashakkori, 2003)

4.4.1 Mixed research designs as worldviews, strategies, and methods

Mixed methods approach Pragmatic worldview, collection of both quantitative and qualitative data sequentially (Crotty, 1998) For clarity, the research paradigm is defined in this paper as a researcher’s philosophical orientation, perspective, thinking, school of thought, or set of shared beliefs that influence what should be studied, how it should be studied, and how the results of the study should be interpreted. The paradigm is composed of three elements, ontology, epistemology and axiology. Although there is no agreement as to an acceptable number or model of classification of paradigms in social science research, four common paradigms were identified in the literature (Okesina, 2020).

Table 4. 2 Designs for mixed methods research

| Component Designs | Integrated Designs |
|---|---|
| <p>Triangulation Different methods are used to assess the same phenomenon toward convergence and increased validity.</p> | <p>Iterative Dynamic and ongoing interplay over time between the different methodologies associated with different paradigms. Spiral type design.</p> |
| <p>Complementary One dominant method type is enhanced or clarified by results from another method type.</p> | <p>Embedded/nested One methodology is located within another, interlocking inquiry characteristics in a framework of creative tension.</p> |
| <p>Expansion Inquiry paradigms frame different methods that are used from distinct inquiry components. The results are presented side-by-side.</p> | <p>Holistic Highlight the necessary interdependence of different methodologies for understanding complex phenomena fully.</p> |
| | <p>Transformative Give primacy to the value-based and action-orientated dimensions of different inquiry traditions. Mix the value commitments of different traditions for better representation of multiple interests.</p> |

Table 4.2 Source: (Caracelli & Greene, 1997)

4.4.2 Procedural considerations in using the mixed methods approach

Mixed methods research is a methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal program of inquiry. According to the divide proposed by (Join W. and Creswel, 2009) the design of the mixed method, there are six types. See table 4.3

Table 4.3 The differences between designs for the mixed method by Creswell & Clark (2011).

| No. | The designs | Explain the designs |
|-----|--------------------------------------|---|
| 1. | Sequential Explanatory Design | This method is a two-phase design where the quantitative data is collected first followed by qualitative data collection. The purpose is to use the qualitative results to further explain and interpret the findings from the quantitative phase. For example, a survey may be used to collect quantitative data from a larger group. Members of that group may then later be selected for interviews where they can explain and offer insights into their survey answers. |
| 2. | Sequential Exploratory Design | This method is also a two-phase design. The qualitative data is collected first, followed by the collection and analysis of quantitative data. The purpose of this design is to develop an instrument (such as a survey), to develop a classification for testing, or to identify variables. Using the information from journals or diaries to develop an appropriate survey to administer to a larger sample would be an example of this design. |

| | | |
|----|--|---|
| 3. | Sequential Transformative Design | This type of design also has two phases but allows the theoretical perspective of the researcher to guide the study and determine the order of data collection. The results from both methods are integrated at the end of the study during the interpretation phase. |
| 4. | Concurrent Triangulation Design | In this design, qualitative and quantitative data are collected concurrently in one phase. The data are analyzed separately and then compared and/or combined. An example would be if a researcher collected survey data and interview data at the same time and compared the results. This method is used to confirm, cross-validate or corroborate findings. It is often used to overcome a weakness in one method with the strengths of another. It can also be useful in expanding quantitative data through the collection of open-ended qualitative data. |
| 5. | Concurrent Nested (Embedded) Design | This design includes one phase of data collection in which priority is given to one approach that guides the project, while the other approach is embedded or nested into the project and provides a supporting role. The embedded approach is often addressing a different question than the primary research question. |
| 6. | Concurrent Transformative Design | This method involves concurrent data collection of both quantitative and qualitative data. It is guided by a theoretical perspective on the purpose or research question of the study. This perspective guides all methodological choices and the purpose is to evaluate that perspective at different levels of analysis. |

Source:(Join W. and Creswel, 2009)

The mixed-methods composed of two main steps: the quantitative step followed by a qualitative one, in a sequential explanatory design. In other words, the qualitative step was explanatory, intended to provide an in-depth understanding of the end-open questions and observation lists findings. The advantages of conducting the explanatory design were that it consists of two phases making application for researchers easier because the researcher conducts the two methods in separate phases and collects only one type of data at a time(Chen, 2009) Creswell and Clark , 2011).

Finally, mix method help to collect the qualitative data and qualitative data. However, the goal of the quantitative part was to explore the preferences of the participants, while the role of the qualitative part was to explain these findings. For example, using questionnaires, open questions, observation, interviews, pre and post-test. Therefore, to reveal the impact of UDL on improving learning for people with special needs(Join W. and Creswel, 2009).

4.4.5 Steps for Conducting a Mixed Methods Study

Step 1 Determine if a mixed-methods study is feasible

Step 2 Identify a rationale for a mixed-method study

Step3 identify the data collection strategy and type of design

Step4 develop quantitative and qualitative mixed methods questions

Step 5 collect quantitative and qualitative data

Step 6 analyzes data separately or concurrently

Step 7 write the report as a one- or two-phase study (Creswel, 2012)

4.4.6 When to use mixed methods of designs

When both quantitative and qualitative data, together, provide a better understanding of your research problem than either type by itself. When one type of research (qualitative or quantitative) is not enough to address the research problem or answer the research questions. Pragmatism practicality; multiple viewpoints; To incorporate a qualitative component into an otherwise quantitative study, to build from one phase of a study to another, Follow-up a quantitative study qualitatively to obtain more detailed information (David L. and Morgan, 2007)

4.5 Mixed research challenges and limitations

As is the case with any research, challenges are expected, including resource constraints, time constraints, the extent of generalization of findings and other factors. How these issues impact the study are addressed and also expected to be covered in the research design (Okesina, 2020)

The mix method designs are clear and accurate, this approach still faces challenges specific to this design. The challenges are that this design requires a lengthy amount of time to implement the two phases. Also, the researchers suffer difficulty keeping on the same individuals for both phases in the collection of qualitative data and quantitative data. Thus, it can be difficult to secure internal review approval for this design because the researcher cannot specify how participants will be selected for the second phase until the initial findings are obtained (Johnson, & Christensen, 2017).

A mixed-method research design is not free from limitations or challenges. The paper has pointed to a number of its challenges (challenges of using a mixed-method approach). The first of these limitations is deciding which mixed method (discussed in the section 'which mixed-method study design) is appropriate for a particular research project. The decision is often difficult for novice researchers because it may be difficult for them to realize how the mixing of methods can inform the data analysis and interpretation of results. Secondly, maintaining a balance between the two research traditions may be a challenge because it is easy for any researcher to focus more on one tradition, they are more comfortable with. Thirdly, integrating data from two methods to complement and extend data analysis and interpretation, and specially triangulating them may be a challenge. Finally, using a mixed method is a lengthy process as each of the research methods consumes time (Dawadi, 2021).

5 Declarations

5.1 Ethical Approval

Not applicable

5.2 Consent to participate

Not applicable.

5.3 Consent for publication

Not applicable

5.4 Availability of data and materials

- All data generated or analysed during this study are included in this published article (and its

supplementary information files).

5.5 Competing interests

The authors declare that they have no competing interests.

5.6 Funding

Authors declare that they can afford the payment for the article publication fee at the payment time.(Self-sponsor)

5.7 Authors' contributions

- a. Ashenafi BekeleMulatu is writer of the article.
- b. Workneh Ayall Negash is Editor.

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