

# Research Paradigms: Qualitative, Quantitative and Mixed Method

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**Abstract:** *The present article describes the paradigms of qualitative and quantitative research. The purpose of this article is to introduce post-graduates and new researchers with quantitative and qualitative research design and to benefit them select the best technique based on the type of information. With this article, author attempts to confer quantitative and qualitative research approaches within the comprehensive ground of educational research, in the reflection of observing for probable resemblances and variances between the two approaches. With this article author initiated with the concept of research and its major purposes, and then links with general information about qualitative, quantitative and mixed method approaches. As well it defines the new approach as mixed method design. Finally, it illustrates the absolute and discrepancy between qualitative and quantitative research with a few concluding notes.*

**Keywords:** Research Paradigms, Quantitative research, Qualitative research, Mixed method

## 1. Introduction

Generally, research refers to a systematic investigation to find answers to a problem. According to Kerlinger (1986), 'scientific research is a systematic, controlled empirical and critical investigation of propositions about the presumed relationships about various phenomenon'. In nutshell, research is primarily committed to establishing systematic, reliable and valid knowledge about the social world. The research has many purposes, the major is listed here:

- Generating new knowledge/finding truth Improving understanding
- Formulating new theories /revision of existing theories
- Refining existing research method
- Clarification of fact
- Application of testing
- To help in decision making process for effective planning, program and implementation
- Scientific study

On the other hand, the specific purposes of research are:

- For the sake of knowledge
- For practical contribution

In conducting research, we need to emphasis on specific design that provides us idea about procedures and logistical provisions required and provide a whole context to commence a study. A research design is a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically (Kumar, 2005). Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design. Others have called them strategies of inquiry (Denzin & Lincoln, 2011).

The word paradigm can be used to mean either approach or design. Paradigms derived from the Greek word for exhibiting side by side in lexica is given with translations examples or tables of changes in form and difference in form. Thus, Paradigms are ways of organising information so that fundamental, abstract relationship can be clearly understood. The idea of paradigm directs attention to science as having recognised patterns of commitments, questions, method and procedure that underlie and give direction to scientific work. The concept of paradigm provides a way to consider the divergence in vision, custom and tradition. It enables us consider science as having different sets of assumptions, commitments, procedures and theories of social affairs. A paradigm could be regarded as a cultural man-made object, reflecting the dominant notions about scientific behaviour in a particular scientific community, be it national or International, and at a particular point in time. Paradigm determines scientific approaches and procedure which stand out as exemplary to the new generation of scientist– as long as they do not oppose them.

The research methodology that was traditionally used in social sciences for several decades was the quantitative methodology, which originated in the natural sciences such as biology, chemistry, physics, geology, and was concerned with investigating things which could be observed and measured in some way. Quantitative research was the generally accepted research paradigm in educational research until the early 1980s, when the “paradigm wars” between advocates of quantitative and qualitative research reached a new peak (Guba, 1990; Tashakkori and Teddlie, 1998). During the 1980s, many quantitative and qualitative researchers argued that their approach was superior. Some of these researchers were “purists,” in the sense that they argued that the two approaches could not be used together because of differences in the world views or philosophies associated with the two approaches. Quantitative and qualitative paradigms of research form two different ways of looking

at the world's phenomenon. The qualitative research design is also known as the socio-Anthropological research paradigm. It is interpretative, and ethnographic in nature. The fundamental approach involves detailed observation, explanation and undertakes that it is impossible to describe exactly what basics are important and crucial and should be measured to the exclusion of others. It claims that validity is important than attempting strictly to define what is being observed and by so doing study the whole condition. Its efforts to study the whole situation in order to evaluate the density and confirm that their assumption take account of both unique and general factors. Qualitative and quantitative research are often presented as two fundamentally different paradigms through which we study the social world. These paradigms act as lightning conductors to which sets of epistemological assumptions, theoretical approaches and methods are attracted. Each is seen to be incompatible with the other (Bryman 2001: 445). These paradigmatic claims have a tendency to resurface from time to time, manifesting themselves in the effects of different cultural traditions upon intellectual styles of research (Galtung 1982). On the other hand, quantitative research paradigm is empirical in nature; it is also identified as the scientific research paradigm. The paradigm ensures validity by the process of rigorous clarification, definition or use of pilot experiments. That is trying out the instruments beforehand, and checking their significance with experts and assessing their reliability by use of statistical tests. This approach can be further sub-classified into inferential, experimental and simulation approaches to research. There has been much debate about quantitative and qualitative approaches to research in different disciplines. In the behavioural and social sciences, these two paradigms are associated to expose their relative strengths and weaknesses. But the debate about both traditions has generally taken place in academic books. It is tough to find an article that deals with the generic issues associated to the quantitative and qualitative split by drawing on eminent research literature.

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## 2. Qualitative Research Approach

Qualitative research collects, analyses, and interprets data by observing what people do and speak. Qualitative research is naturalistic, interpretative approach concerned with understanding the meanings which people attach to phenomena (actions, decisions, beliefs, values etc.) within their social worlds (Denzin & Lincoln, 2005). Berg (2007) states it refers to meanings, concepts, definitions and characteristics, metaphors, symbols and descriptions of things.

Instead of providing a broad view of a phenomenon that can be generalized to the population, qualitative research seeks to explain a current situation and only describes that situation for that group. Since only a current situation is observed, all qualitative research is done in the field. A

possible exception is the focus group, which is conducted with 3-10 persons and uses a script of questions. The moderator asks the questions and the plotter records the responses. Though a focus group is directed in a controlled environment, the open-ended questions and lack of rigid sample selection make it seem more like a field exercise.

Qualitative research answer questions on: Why people behave the way they do? How opinions and attitudes are shaped? How people are affected by the events that go on around them? How and why cultures have developed?

## 3. Quantitative Research Approach

Quantitative research is 'explaining phenomenon by collection numerical data that are analysed using mathematically based methods (in particular statistics)' (Aliaga and Gunderson, as cited in Muijs, 2004). Quantitative research is controlled, obstructive, objective and product oriented which aims at quantifying the variation of certain situation, issue, even or phenomenon. Quantitative Research establishes statistically significant conclusions about a population by studying a representative sample of the population. The population consists of the entire group being studied. It does not matter if the population is broad or narrow, only that it includes every individual that fits the description of the group being studied. The objective of quantitative research is to develop and employ mathematical models, theories and /or hypothesis pertaining to phenomena. Leedy (1993) utters:

Quantitative research method deals with numbers and anything that is measurable in a systematic way of investigation of phenomenon and their relationships. It is used to answer questions on relationships within measurable variables with an intention to explain, predict and control phenomena.

The quantitative research aims to govern the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. It is an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures and /or hypothesis pertaining to phenomena.

### Distinction between Quantitative and Qualitative Research Paradigms

Pure quantitative research relies on the collection of quantitative data (i.e., numerical data) and follows the other characteristics of the quantitative research paradigm shown in Table 1. Pure qualitative research relies on the collection of qualitative data (i.e., non-numerical data such as words and pictures). First, the quantitative research approach primarily follows the confirmatory scientific method because its focus is on hypothesis testing and theory testing. Quantitative researchers consider it to be of primary importance to state one's hypotheses and then test those hypotheses with empirical data to see if they are supported. On the other hand, qualitative research

primarily follows the exploratory scientific method. Qualitative research is used to describe what is seen locally and sometimes to come up with or generate new hypotheses and theories. Qualitative research is used when little is known about a topic or phenomenon and when one wants to discover or learn more about it. It is commonly used to understand people’s experiences and to express their perspectives. Researchers advocating mixed research argue that that it is important to use both the exploratory and the confirmatory methods in one’s research (Johnson & Onwuegbuzie, 2004).

Quantitative and qualitative researches are also distinguished by different views of human behaviour. In

quantitative research, it is assumed that cognition and behaviour are highly predictable and explainable. Traditionally, the assumption of determinism, which means that all events are fully determined by one or more causes, was made in quantitative research (Salmon, 2007). Because quantitative research has not identified any universal or unerring laws of human behaviour, most contemporary quantitative researchers search for probabilistic causes (Humphreys, 1989).

Table 1 below shows a summary of major differences between quantitative and qualitative approaches to research.

**Table 1:** Differences between Quantitative and Qualitative Research Approaches

Orientation	Quantitative Approach	Qualitative Approach
Paradigm/Worldview (assumption about world)	Positivism/Realism	Interpretivism/Idealism
Research Purpose (rationale)	Numerical description Causal explanation Prediction	Subjective description Empathetic understanding Exploration
Epistemology (theory of knowledge)	Dualist/Objectivist	Subjectivist
Methodology (aims of scientific investigation)	Experimental/Manipulative	Hermeneutical/Dialectical
Research Methods (techniques and tools)	Empirical examination Measurement Hypothesis testing Randomization Blinding Structured Protocols Questionnaires	Ethnographies Case studies Narrative Research Interviews Focus group discussion Observations Field notes Recordings & Films
Scientific Method (role of theory)	Deductive approach, testing of theory	Inductive approach, generation of theory
Nature of Data Instruments	Variables Structured and Validated-data collection instruments	Words, images, categories In-depth interviews, participant observation, field notes, and open-ended questions
Data Analysis	Identify statistical relationships among variables	Use descriptive data, search for patterns, themes ad holistic features and appreciate variations
Results	Generalizable findings	Particularistic findings; provision of insider viewpoint
Final Report	Formal statistical report with: <ul style="list-style-type: none"> <li>• Correlations</li> <li>• Comparisons of means</li> <li>• Reporting of statistical significance of findings</li> </ul>	Informal narrative report

**4.Mixed Methods Research Approach**

In mixed research, the researcher uses a mixture or combination of quantitative and qualitative methods, approaches, or concepts in a single research study or in a set of related studies. The qualitative and quantitative parts of a research study might be conducted concurrently (conducting both parts at roughly the same time) or sequentially (conducting one part first and the other second) to report a research question or a set of associated questions. Mixed researchers see positive value in both the quantitative and the qualitative views of human behaviour. They view the use of only quantitative research or only qualitative research as limiting and imperfect for many research problems. If single research makes use of both qualitative and quantitative research methods, the study is said to be mixed methods research. Creswell (2014) suggests that mixed methods research is an approach in which the researcher collects analyses and interprets both quantitative and qualitative data, integrates the two approaches in various ways and frames the study within a specific design. The mixed-method researches are of;

Convergent (parallel design), Explanatory sequential (Quan-Qual), Exploratory sequential (Qual-Quan), Embedded intervention design.

To conclude, qualitative research and quantitative research share the same patterns, structures, steps, procedures, principles, methods, techniques, and are used synonymously. Depending upon the desired outcome of the research, social scientists may choose between quantitative or qualitative designs. Since they seek to explain events from different perspectives, both are valid ways to evaluate a phenomenon in the proper context. The fundamental divergence between qualitative and quantitative inquiries lies in the logic of justification, not methods as techniques. The two methodologies in question were developed from two completely different ontological and epistemological perspectives and represent two distinct worldviews or paradigms (Silverman, 2004). Guba and Lincoln (1994) state that paradigms represent one’s set of basic beliefs and as such must be accepted simply on faith. These research types differ in terms of treatment of data but are not mutually exclusive. The way a researcher

decides to collect, analyse, and interpret the data determines either research is qualitative or quantitative.

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