Qualitative and Quantitative Research Paradigms in Business

Research: A Philosophical Reflection

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Abstract

This paper attempts to discuss quantitative and qualitative research methodologies within the broad field of business research. In the light of looking for possible similarities and differences between the two approaches, the study gives an overview of the historical development of both methods, the paradigms and interpretative frameworks, discusses major advantages and limitations and look at the new trend that combines both quantitative and qualitative data in a single research project in an effort to reconcile both methods. The main intention of this paper is not to extend the current and long-lasting debate regarding qualitative versus quantitative research, rather to describe and reflect on the philosophical stance guiding the two research methodologies from ontological, epistemological and methodological perspectives. The essence of this study is to enable professionals with little or no previous experience of the various research methodologies and falling in to the trap that one research is better than the other, gain a basic understanding of qualitative and quantitative research. The study concludes that, in addition to quantitative and qualitative research, mixed research also offers an exciting mode of conducting business research.

Keywords: Qualitative and Quantitative Methodologies, Business Research, Paradigms

1.0 Introduction

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.

This article is not an exhaustive attempt to analyze and synthesise all aspects of distinction between qualitative and quantitative research methodology. However, it aims at highlighting their differences from ontological, epistemological and methodological perspectives. Thus, the study conceptualizes quantitative and qualitative meta-theoretical assumptions concerning the nature of the knowable or reality (ontology), views on truth and legitimate knowledge (epistemology), and how the inquirer finds out knowledge (methodology). A critical analysis and synthesis of previously published materials are employed, with the view of assisting and empowering business researchers to understand the true distinction between quantitative and qualitative paradigms. Bryman (2001: 106) suggests that 'the distinction between qualitative and quantitative research perspective is really a technical matter whereby the choice between them is to do with their suitability in answering particular research questions'. Following this suggestion, it is not the aim of this section to justify which research method is superior to the other. The study, however, interrogates the incompatibility thesis of the two inquiries resulting in the either-or position.

The rest of the paper is organised as follows: the next section looks at the literature review; it contextualizes the distinction between qualitative and quantitative research from the ontological, epistemological and methodological perspectives. The last section concludes and summarises the review.

2.0 Literature Review

All research is based on some underlying philosophical assumptions about what constitutes 'valid' research and which research method(s) is/are appropriate for the development of knowledge in a given study. The selection of

research methodology depends on the paradigm that guides the research venture. The term paradigm originated from the Greek word *paradeigma* which means pattern and was first used by Kuhn (1962) to denote a conceptual framework shared by a community of scientists which provided them with a convenient model for examining problems and finding solutions. According to him, the term paradigm refers to a research culture with a set of beliefs, values, and assumptions that a community of researchers has in common regarding the nature and conduct of research (Kuhn, 1977). A paradigm hence implies a pattern, structure and framework or system of scientific and academic ideas, values and assumptions (Olsen, Lodwick, and Dunlop, 1992). In simple terms, it is an approach to thinking about and doing research.

According to TerreBlanche and Durrheim (1999), the research process has three major dimensions: ontology, epistemology and methodology. According to them a research paradigm is an all-encompassing system of interrelated practice and thinking that define the nature of enquiry along these three dimensions. Guba and Lincoln (1998) stated that a research paradigm is intrinsically associated with the concepts of ontology, epistemology and methodology. They suggested that a research inquiry should be based on the concepts of ontology (i.e., the way the investigator defines the truth and reality), epistemology (i.e., the process in which the investigator comes to know the truth and reality) and methodology (i.e., the method used in conducting the investigation). According to these researchers, the answer to questions regarding these three elements provides an interpretative framework that guides the entire research process including strategies, methods and analysis.

2.1 Ontological Issues in Business Research
The term Ontology is from two Greek words (*onto*, which means 'being' and *logia*, which means 'science, study or theory'. Ontology refers to a branch of philosophy concerned with articulating the nature and structure of the world (Wand and Weber, 1993, p. 220). It specifies the form and nature of reality and what can be known about it. There are two broad contrasting positions – objectivism and constructionism; objectivism holds that there is an independent reality and constructionism that assumes that reality is the product of social processes (Neuman, 2003).

The positivist paradigm of exploring social reality is based on the philosophical ideas of the French Philosopher, August Comte. According to him, observation and reason are the best means of understanding human behaviour; true knowledge is based on experience of senses and can be obtained by observation and experiment. At the ontological level, positivists assume that reality is objectively given and is measurable using properties which are independent of the researcher and instruments; in other words, knowledge is objective and quantifiable. Positivistic thinkers adopt scientific methods and systematize the knowledge generation process with the help of quantification to enhance precision in the description of parameters and the relationship among them. Positivism is concerned with uncovering truth and presenting it by empirical means (Henning, Van Rensburg and Smit, 2004).

According to Walsham (1995b) the positivist position maintains that scientific knowledge consists of facts while its ontology considers reality as independent of social construction. If research study consists of a stable and unchanging reality, then the researcher can adopt an 'objectivist' perspective: a realist ontology – a belief in an objective, real world - and detached epistemological stance based on a belief that people's perceptions and statements are either true or false, right or wrong, a belief based on a view of knowledge as hard, real and acquirable; they can employ methodology that relies on control and manipulation of reality. On the other hand, interpretive researchers believe that reality consists of people's subjective experiences of the external world; thus, reality is socially constructed – it is a human construct (Mutch, 2005). According to Willis (1995) interpretivists are anti-foundationalists, who believe there is no single correct route or particular method to knowledge. Walsham (1993) argues that in the interpretive tradition there are no 'correct' or 'incorrect' theories. Instead, they should be judged according to how 'interesting' they are to the researcher as well as those involved in the same areas. They attempt to derive their constructs from the field by an in-depth examination of the phenomenon of interest. Gephart (1999) argues that interpretivists assume that knowledge and meaning are acts of interpretation, hence there is no objective knowledge which is independent of thinking, reasoning humans. Myers (2009) argues that the premise of interpretive researchers is that access to reality (whether given or socially constructed) is only through social constructions such as language, consciousness and shared meanings.

Interpretive paradigm is underpinned by observation and interpretation, thus to observe is to collect information about events, while to interpret is to make meaning of that information by drawing inferences or by judging the match between the information and some abstract pattern (Aikenhead, 1997). It attempts to understand phenomena through the meanings that people assign to them (Deetz, 1996). Reeves and Hedberg (2003, p. 32) note that the "interpretivist" paradigm stresses the need to put analysis in context. The interpretive paradigm is

concerned with understanding the world as it is from subjective experiences of individuals. They use meaning (versus measurement) oriented methodologies, such as interviewing or participant observation, that rely on a subjective relationship between the researcher and subjects. Interpretive research does not predefine dependent and independent variables, but focuses on the full complexity of human sense making as the situation emerges (Kaplan and Maxwell, 1994). This is the interpretive approach, which aims to explain the subjective reasons and meanings that lie behind social action. The interest of interpretivists is not the generation of a new theory, but to judge or evaluate, and refine interpretive theories.

2.2 Epistemological Issues in Business Research

Epistemology refers to the nature of the relationship between the researcher (the knower) and it denotes "the nature of human knowledge and understanding that can possibly be acquired through different types of inquiry and alternative methods of investigation" (Hirschheim, Klein, and Lyytinen, 1995: 20). Epistemology poses the following questions: What is the relationship between the knower and what is known? How do we know what we know? What counts as knowledge? There are two broad epistemological positions: positivism and interpretivism - constructivism.

For positivists, who are evolved largely from a nineteenth-century philosophical approach, the purpose of research is scientific explanation. According to Neuman (2003) positivism sees social science as an organized method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity. The nature of social reality for positivists is that: empirical facts exist apart from personal ideas or thoughts; they are governed by laws of cause and effect; patterns of social reality are stable and knowledge of them is additive (Crotty, 1998; Neuman, 2003; Marczyk, DeMatteo and Festinger, 2005). A basic assumption of this paradigm as Ulin, Robinson and Tolley (2004) remarked is that the goal of science is to develop the most objective methods possible to get the closest approximation of reality. Researchers who work from this perspective explains in quantitative terms how variables interact, shape events, and cause outcomes. They often develop and test these explanations in experimental studies. Multivariate analysis and techniques for statistical prediction are among the classic contributions of this type of research. This framework maintains that reliable knowledge is based on direct observation or manipulation of natural phenomena through empirical, often experimental, means (Lincoln & Guba, 2000, 2005; Neuman, 2003).

On the other hand, an interpretivist/constructivist perspective, the theoretical framework for most qualitative research, sees the world as constructed, interpreted, and experienced by people in their interactions with each other and with wider social systems (Maxwell, 2006; Bogdan and Biklen, 1992; Guba and Lincoln, 1985; Merriam, 1988). According to this paradigm the nature of inquiry is interpretive and the purpose of inquiry is to understand a particular phenomenon, not to generalize to a population (Farzanfar, 2005). Researchers within the interpretivist paradigm are naturalistic since they apply to real-world situations as they unfold naturally, more specifically; they tend to be non-manipulative, unobtrusive, and non-controlling.

According to Ulin, Robinson and Tolley (2004), qualitative research methodology often rely on personal contact over some period of time between the researcher and the group being studied. Building a partnership with study participants can lead to deeper insight into the context under study, adding richness and depth to the data. Thus, qualitative methodologies are inductive, that is, oriented toward discovery and process, have high validity, are less concerned with generalizability, and are more concerned with deeper understanding of the research problem in its unique context (Ulin, Robinson and Tolley, 2004). Both positivist and interpretive researchers hold that human behaviour may be patterned and regular. However, while positivists see this in terms of the laws of cause and effect, interpretivists view such patterns as being created out of evolving meaning systems that people generate as they socially interact (Neuman, 2003).

Since interpretive researchers place strong emphasis on better understanding of the world through firsthand experience, truthful reporting and quotations of actual conversation form insiders perspectives (Merriam, 1998) than testing the laws of human behaviour (Bryman, 2001; Farzanfar, 2005), they employ data gathering methods that are sensitive to context (Neuman, 2003), and which enable rich and detailed, or thick description of social phenomena by encouraging participants to speak freely and understand the investigator's quest for insight into a phenomenon that the participant has experienced. Owing to this, interview, focus group discussion and naturalistic observation are the most widely used data gathering methods for researchers using qualitative research methodology. To the contrary, the positivist researchers' emphasis on explaining behaviour through measurable data by using highly standardized tools such as questionnaire, psychological tests with precisely worded questions.

Issues of trustworthiness and credibility, as opposed to the positivist criteria of validity, reliability and objectivity, are key considerations in the interpretivist paradigm. According to Ulin, Robinson and Tolley (2004) positivists use validity, reliability, objectivity, precision, and generalizability to judge the rigor of quantitative studies as they intended to describe, predict, and verify empirical relationships in relatively controlled settings. On the other hand, qualitative research that aims to explore, discover, and understand cannot use the same criteria to judge research quality and outcomes. Lincoln and Guba (1985) suggest that the fundamental criterion for qualitative reports is trustworthiness. How, they ask, can a researcher be certain that "the findings of an inquiry are worth paying attention to, worth taking account of? For research to be considered credible and authentic investigations should be based on a sound rationale that justifies the use of chosen methodology and the processes involved in data collection and analysis.

2.3 Methodological Issues in Business Research

Methodology refers to how the researcher goes about practically finding out whatever he or she believes can be known. It is a research strategy that translates ontological and epistemological principles into guidelines that show how research is to be conducted (Sarantakos, 2005), and principles, procedures, and practices that govern research (Kazdin, 1992, 2003a, cited in Marczyk, DeMatteo and Festinger, 2005).

The positivist research paradigm underpins quantitative methodology. The realist/objectivist ontology and empiricist epistemology contained in the positivist paradigm requires a research methodology that is objective or detached, where the emphasis is on measuring variables and testing hypotheses that are linked to general causal explanations (Sarantakos, 2005; Marczyk, DeMatteo and Festinger, 2005). Positivist research uses experimental designs to measure effects, especially through group changes. The data collection techniques focus on gathering hard data in the form of numbers to enable evidence to be presented in quantitative form (Neuman, 2003; Sarantakos, 2005). In terms of methodology, truth in positivist inquiry is achieved through the verification and replication of observable findings (Guba and Lincoln, 2005), variable manipulations of the research objects (Trochim, 2000) and the application of statistical analysis (Bryman, 1998; Kim, 2003). Positivists therefore, emphasise the use of valid and reliable methods in order to describe and explain the events.

In contrast, qualitative methodology is underpinned by interpretivist epistemology and constructionist ontology. This assumes that meaning is embedded in the participants' experiences and that this meaning is mediated through the researcher's own perceptions (Merriman, 1998). Researchers using qualitative methodology immerse themselves in a culture by observing its people and their interactions, often participating in activities, interviewing key people, taking life histories, constructing case studies, and analyzing existing documents or other cultural artifacts. The qualitative researcher's goal is to attain an insider's view of the group under study. Methodologically, constructivists and interpretivists do not believe in experimental or quasi-experimental research designs. Constructivists assume that reality is multifaceted and cannot be fragmented or studied in a laboratory, rather it can only be studied as a unified whole within its natural context (Candy, 1991).

3.0 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).

Most researchers use inductive and deductive reasoning when they conduct research. For example, they use inductive reasoning when they search for patterns in their particular data, when they make generalizations (e.g., from samples to populations), and when they make inferences as to the best explanation. Ultimately, the logic of confirmation is inductive because we do not get conclusive proof from empirical research. Researchers use deductive reasoning when they deduce from their hypotheses the observable consequences that should occur

with new empirical data if their hypotheses are true. Researchers also use deductive reasoning if they conclude that a theory is false. If they draw this conclusion, they will then move on to generate and test new ideas and new theories.

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). A probabilistic statement might go like this: "Adolescents who become involved with drugs and alcohol are more likely to drop out of high school than are adolescents who do not become involved with drugs and alcohol." The point is that most quantitative researchers try to identify cause-and-effect relationships that enable them to make probabilistic predictions and generalizations.

On the other hand, qualitative researchers often view human behaviour as being fluid, dynamic, and changing over time and place, and they usually are not interested in generalizing beyond the particular people who are studied. In qualitative research, different groups are said to construct their different realities or perspectives, and these social constructions, reciprocally, influence how they "see" or understand their worlds, what they see as normal and abnormal, and how they should act.

Quantitative research often uses what might be called a "narrow-angle lens" because the focus is on only one or a few causal factors at the same time. Quantitative researchers attempt to hold constant the factors that are not being studied. This is often accomplished under laboratory conditions in which an experimenter randomly assigns participants to groups, manipulates only one factor, and then examines the outcome. Qualitative research uses a wide- and deep-angle lens, examining human choice and behaviour as it occurs naturally in all of its detail. Qualitative researchers do not want to intervene in the natural flow of behaviour. Qualitative researchers study behaviour naturalistically and holistically. They try to understand multiple dimensions and layers of reality, such as the types of people in a group, how they think, how they interact, what kinds of agreements or norms are present, and how these dimensions come together holistically to describe the group.

Quantitative researchers attempt to operate under the assumption of objectivity. They assume that there is a reality to be observed and that rational observers who look at the same phenomenon will basically agree on its existence and its characteristics. They try to remain as neutral or value-free as they can, and they attempt to avoid human bias whenever possible. In a sense, quantitative researchers attempt to study the phenomena that are of interest to them "from a distance." Standardized questionnaires and other quantitative measuring tools are often used to measure carefully what is observed. In experiments, researchers frequently use random assignment to place participants into different groups to eliminate the possibility of human bias while constructing the comparison groups. In judging results, statistical criteria are used to form many conclusions.

Qualitative researchers generally contend that "reality is socially constructed" (e.g., Guba and Lincoln, 1989); social behaviour follows socially constructed norms. They argue that it is important to "get close" to their objects of study through participant observation so that they can experience for themselves the subjective dimensions of the phenomena they study. In qualitative research, the researcher is said to be the "instrument of data collection." Rather than using a standardized instrument or measuring device, the qualitative researcher asks the questions, collects the data, makes interpretations, and records what is observed. The qualitative researcher constantly tries to understand the people he or she is observing from the participants' or "natives'" or "actors'" viewpoints. This is the concept of "empathetic understanding." Weber (1968) called this idea of understanding something from the other person's viewpoint **verstehen**. Qualitative research is focused on understanding the "insider's perspective" of people and their cultures and this requires direct personal and often participatory contact.

An obvious basic distinction between qualitative and quantitative research is the form of data collection, analysis and presentation. While quantitative research presents statistical results represented by numerical or statistical data, qualitative research presents data as descriptive narration with words and attempts to understand phenomena in "natural settings". This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them" (Denzin and Lincoln, 2000: 3). Quantitative research makes use of questionnaires, surveys and experiments to gather data that is revised and tabulated in numbers, which allows the data to be characterised by the use of statistical analysis (Hittleman and Simon, 1997). Quantitative researchers measure variables on a sample of subjects and express the relationship between variables using effect statistics such as correlations, relative frequencies, or

differences between means; their focus is to a large extent on the testing of theory. 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
Ontology (nature of reality)		
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 & Filmings
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: • Correlations • Comparisons of means • Reporting of statistical significance of findings	Informal narrative report

Stake (1995) describes three major differences in qualitative and quantitative emphasis, noting a distinction between: explanation and understanding as the purpose of the inquiry; the personal and impersonal role of the researcher; and knowledge discovered and knowledge constructed (p. 37). Another major difference between the two is that qualitative research is inductive and quantitative research is deductive. In qualitative research, a hypothesis is not needed to begin research; it employs inductive data analysis to provide a better understanding of the interaction of "mutually shaping influences" and to explicate the interacting realities and experiences of researcher and participant (Lincoln and Guba, 1985). It allows for a design to evolve rather than having a complete design in the beginning of the study because it is difficult if not impossible to predict the outcome of interactions due to the diverse perspectives and value systems of the researcher and participants, and their

influence on the interpretation of reality and the outcome of the study. However, all quantitative research requires a hypothesis before research can begin.

Quantitative research generally reduces measurement to numbers. In survey research, for example, attitudes are usually measured by using rating scales. The interviewer or questionnaire provides a statement, and the respondents reply with one of the five allowable response categories. After all respondents have provided their answers, the researcher typically calculates and reports an average for the group of respondents. On the other hand, qualitative researchers do not usually collect data in the form of numbers. Rather, they conduct observations and in-depth interviews, and the data are usually in the form of words.

The facilitator of the focus group would probably videotape the group and tape-record what was said. Later, the recording would be transcribed into words, which would then be analyzed by using the techniques of qualitative data analysis. Also, when a qualitative researcher enters the field and makes observations, the researcher will write down what he or she sees, as well as relevant insights and thoughts. The data are again in the form of words. During qualitative data analysis, the researcher will try to identify categories that describe what happened, as well as general themes appearing again and again in the data.

4.0 Mixed Research Paradigm

Mixed research involves the mixing of quantitative and qualitative research methods, approaches, or other paradigm characteristics. The exact mixture that is considered appropriate will depend on the research questions and the situational and practical issues facing a researcher. According to mixed research, it is important to understand both the subjective (individual), inter-subjective (language-based, discursive, cultural), and objective (material and causal) realities in our world. Although it is important not to influence or bias what you are observing, it also is important to understand the insiders' meanings and viewpoints.

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 address a research question or a set of related 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 incomplete for many research problems.

5.0 Conclusion

The two major and most popular forms of research are qualitative methodology, which is grounded on interpretivist paradigm and quantitative methodology, which is grounded on positivist paradigm. Quantitative methodology is concerned with attempts to quantify social phenomena and collect and analyze numerical data, and focus on the links among a smaller number of attributes across many cases. Qualitative methodology, on the other hand, is more concerned with understanding the meaning of social phenomena and focus on links among a larger number of attributes across relatively few cases. In any research endeavour, linking research and philosophical traditions or schools of thought helps clarify a researcher's theoretical frameworks (Cohen, et al. 2000). The framework for any research includes beliefs about the nature of reality and humanity (ontology), the theory of knowledge that informs the research (epistemology), and how that knowledge may be gained (methodology) that brought about differences in the type of research methodologies used in social science research.

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. Each researcher should decide which paradigm reflects his or her set of personal beliefs and adhere to that worldview. It is argued that no one research methodology is better or worse than the other as both are proven to be useful in most research endeavours (Cohen, Manion and Morrison, 2000; Silverman, 1997); what is critical is the selection of the appropriate research methodology for an inquiry at hand. In the same vein Merriman (1998) argues that getting started on a research project begins with examining your own orientation to basic tenets about the nature of reality, the purpose of doing research, and the type of knowledge that can be produced. Given these description, it can be summed up that the selection of research methodologies depends on "fitness for purpose" as opined by Tuli (2010).

Some authors emphasize the incompatibility of quantitative and qualitative approaches. Guba and Lincoln (1989) argue that meta-theoretical assumptions underlying the two approaches are so different that any reconciliation would destroy the philosophical foundations of each. Ontological and epistemological postulates of each approach are so idiosyncratic that they cannot be combined. As Guba (1987) states, one paradigm rules out the other, just as surely belief in round world precludes belief in flat one. Nevertheless, some argue that it is possible to subscribe to the philosophy of one approach and employ the methods of another (Reichardt and Cook, 1979; Sale et al., 2002; Walle, 1997; Walsh, 2003). Sale et al. (2002) suggest that the fact that the approaches are ontologically and epistemologically incommensurate does not mean that multiple methods cannot be combined in a single study if it is done for complementary purposes. They caution that each method studies different phenomena and the distinction of phenomena in mixed-method research is critical and should be accounted for. This reveals an additive outcome for mixed-methods research. On the basis of this account, it is concluded that qualitative and quantitative work can be done in a single study or series of investigations. Mixed research involves mixing and combining qualitative and quantitative research in single research studies. It is based on the philosophy of pragmatism (i.e., what works is what should be considered to be important in answering research questions).

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