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QUALITATIVE VERSUS QUANTITATIVE RESEARCH STRATEGIES: CONTRASTING EPISTEMOLOGICAL AND ONTOLOGICAL ASSUMPTIONS

SITI FATIMAH BAHARI[1]

Abstract. This paper attempts to discuss how qualitative (intensive) and quantitative (extensive) research strategies differ by contrasting epistemological and ontological aspects and how these beliefs and views fit with their different intellectual goals. Firstly, this paper discusses the importance of understanding philosophy in social science research and its relation to qualitative (intensive) and quantitative (extensive) research strategies. Then it develops by contrasting these two types of research strategies in relation to the principle orientation to the role of theory, epistemological and ontological assumptions. Epistemological assumptions consist of interpretivism for qualitative (intensive) research strategies and positivism for quantitative (extensive) research strategies. Whereas ontological assumptions constitute subjectivism/constructivism for qualitative (intensive) research and objectivism for quantitative (extensive) research strategies. Further it will explain how these two types of research strategies fit the different intellectual goals and finally concludes by discussing an alternative research strategi namely mixed method that may be employed in social science research.

Keywords: Qualitative; quantitative; epistemology; ontology; research strategies

Abstrak. Kertas kerja ini membincangkan bagaimana strategi penyelidikan kualitatif (intensif) dan kuantitatif (ekstensif) berbeza dengan membandingkan aspek-aspek epistemologi dan ontologi dan bagaimana kepercayaan dan pandangan ini menepati objektif intelektual yang berbeza. Pertama sekali kertas kerja ini membincangkan kepentingan memahami falsafah dalam penyelidikan sains sosial dan hubungannya dengan strategi penyelidikan kualitatif (intensif) dan kuantitatif (ekstensif). Kemudian, perbincangan diteruskan dengan membandingkan dua jenis strategi penyelidikan ini berhubung dengan orientasi utama terhadap peranan teori, anggapan-anggapan epistemologi dan ontologi. Anggapan-anggapan epistemologi yang dibincangkan dalam kertas kerja ini termasuklah intepretivism bagi strategi penyelidikan kualitatif (intensif) dan positivisme bagi strategi penyelidikan kuantitatif (ekstensif). Manakala anggapan-anggapan ontologi yang dibincangkan dalam kertas kerja ini meragkumi subjectivism/constructivism bagi penyelidikan kualitatif (intensif) dan objektivisme bagi strategi penyelidikan kuantitatif (ekstensif). Seterusnya bahagian kedua kertas kerja ini, menerangkan bagaimana dua jenis strategi penyelidikan ini menepati objektif intelektual. Akhirnya, sebagai kesimpulan kertas kerja ini membincangkan strategi penyelidikan alternatif iaitu kaedah campuran (mixed methods) yang boleh diaplikasikan dalam penyelidikan sains sosial.

Kata kunci: Kualitatif; kuantitatif; epistemologi; ontologi; strategi penyelidikan

[1] Department of Human Resource Development, Faculty of Management & Human Resource Development, Universiti Teknologi Malaysia, 81300 Skudai, Johor
Email: etybahari@yahoo.com

1.0 IMPORTANCE OF RESEARCH PHILOSOPHY IN SOCIAL SCIENCES

Research philosophy is very important in any kind of research whether natural sciences or social sciences. Easterby-Smith *et al*. (2002: 27) emphasize that if one fails to think on philosophical issues in his/her research it can seriously affect the quality of research itself. Hence, prior to conduct research one has to think about the underlying philosophy, as philosophy is central to the notion of research design. Research philosophy in social science relates to the development of knowledge and the nature of that knowledge in social world. Research philosophy includes important assumptions about how one observes or views the social world. It involves thinking about epistemology and ontology which have important distinctions that will affect the methods in which a researcher thinks about the research process.

Understanding philosophy in business and management research is very useful due to several reasons. As stress by Easterby-Smith *et al.* (2002: 27), there are three main reasons why one should understand philosophy in research; (1) It can help to clarify research designs, (2) which design will work and will not, and (3) to identify and even create, designs that may be outside his or her past experience.

2.0 MODES OF RESEARCH STRATEGIES: QUALITATIVE (INTENSIVE) VERSUS QUANTITATIVE (EXTENSIVE)

Researchers often face difficulties in choosing between two types of research strategies namely intensive and extensive research. The term 'intensive' and 'extensive' research strategies were first introduced by Harre in his book *Social Being*, 1979 (Sayer, 1992: 242). The terms intensive' and 'extensive' research are associated with the terms 'qualitative' and 'quantitative' research. I would say that intensive research is qualitative and extensive research is quantitative research based on the characteristics outlined by Andrew Sayer in his book *Method In Social Science A Realist Approach* (see Sayer, 1992: 243). Qualitative and quantitative research strategies are distinct in several aspects. Qualitative research is one in which the researcher usually makes knowledge claims based on constructivist perspectives (Cresswell, 2003). Strategies used in this research design involve inquiry such as narratives, phenomenologies, ethnographies, grounded theory studies, or case studies. Bryman (2004: 266) states that qualitative research normally emphasizes words rather than quantification in the collection and analysis of data.

In contrast, quantitative research design has different concepts and definition. Cresswell (2003) defines quantitative research is one in which the researcher primarily uses post positivist claims for developing knowledge for example; cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurements and observations, and the test of the theories. Strategies usually used in this research design are experiments and surveys, and predetermined instruments in

data collection that produce statistical data. In addition, Bryman (2004: 266) asserts quantitative research usually emphasizes quantification in the collection and analysis of data.

Consequently, the main distinction between qualitative and quantitative research designs is about the question of scale or 'depth versus breath' (Sayer 1992: 242). There are few basic differences between both research designs, such as: research questions, technique and methods of data collection used, limitations and how the objects are defined. However the differences between qualitative and quantitative research is not simply the difference between statistical analysis and in depth interview, survey or case study or about the test of corroboration and replication. Research is not only about the question of methodology, but also the selection of research strategy which involves some views or beliefs that underlie the situation of what is being studied.

The debate regarding qualitative and quantitative research at the epistemological stage is known as 'the paradigm wars' (Bryman, 2006: 16). As emphasized by Kuhn (1970) that research approaches are based in 'paradigms' that make different assumptions about the social world, and how science should be concluded and what constitutes legitimate problems, solutions, and criteria of proof. Therefore qualitative and quantitative research strategies are 'incommensurable' according to their paradigm and worldview and reflect epistemological and ontological assumptions.

Bryman (2004: 19) distinguishes qualitative and quantitative research strategies by focusing on three main aspects namely the connection between theory and research, epistemology and ontology. The three main aspects mentioned are illustrated in Table 1.

Table 1 Fundamental differences between qualitative and quantitative research strategies

Orientations	Qualitative	Quantitative
Principle orientation to the role of theory in relation to research	Inductive; generation of theory	Deductive; testing of theory
Epistemological orientation	Interpretivism	Positivism
Ontological orientation	Subjectivism/constructivism	Objectivism

Source: Adopted from Bryman (2004)

3.0 CONNECTION BETWEEN THEORY AND RESEARCH

3.1 Inductive

Qualitative research strategy is characterized as inductive. Saunders *et al.* (2007: 17) state that inductive approach involves the development of a theory as a result of the observations of empirical data. Figure 1 presents the procedure of inductive logic. In

inductive approach the researcher begins by gathering information from participants and develops this information into themes. These themes are then developed into broad patterns, theories, or generalizations. Finally it will be compared with personal experiences or with the existing literature related to the topic. For example, in order to understand first the nature of the context, the researcher conducts a preliminary study (i.e. pre-interviews) and then refers to the theories. According to Rocco *et al.* (2003), inductive logic and qualitative methods are generally employed with the goal of understanding a particular phenomenon of interest within its social context. Therefore, it is common to conclude that inductive approach in qualitative research strategies is related to theory generation.

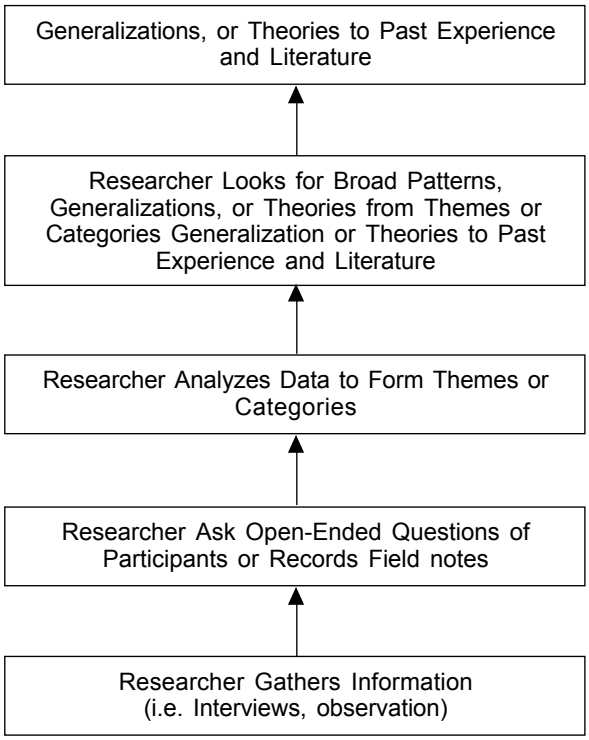

Figure 1 The inductive logic
(Source: Adopted from Cresswell, 2003: 132)

3.2 Deductive

In contrast, quantitative research strategy is characterized by deductive approach. Deductive approach as stated by Bryman (2004: 8) is "an approach to the relationship between theory and research in which the latter is conducted with reference to hypotheses and ideas inferred from the former." Researcher uses theory deductively and put it forward as the start of a study. The theory used in the research becomes as

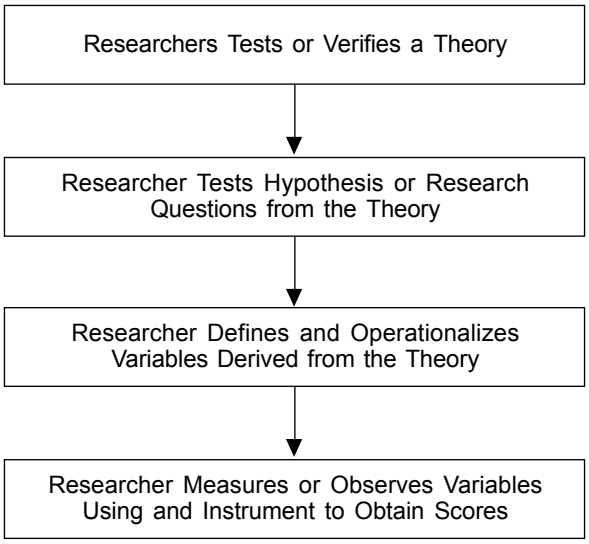

Figure 2 The deductive approach
(Source: Adopted from Creswell, 2003: 125)

a framework for the whole study, organizing model for the research questions or hypotheses and procedure for data collection. (Cresswell, 2003: 125). Figure 2 illustrates the process of deductive approach that usually used quantitative research.

In deductive approach researchers test or verify a theory by examining research questions or hypotheses derived from the theory. These research questions or hypotheses contains variables that need to be defined, and then develop the instrument to measure/observe behaviors or attitudes of the respondent in a study. Finally the researcher gathers scores of the instrument used to confirm or disconfirm theories. Therefore deductive approach is commonly known as testing/verifying theory and are normally used in extensive research strategies.

4.0 EPISTEMOLOGICAL ASSUMPTIONS: INTERPRETIVISM VERSUS POSITIVISM

All research methods incorporate a variety of epistemological and ontological assumptions. According to Bryman (2004: 11) epistemology is a theory of knowledge and concern of what is considered as acceptable knowledge in a particular discipline. Similarly, Saunders *et al.* (2007: 102) note that an epistemology is a branch of philosophy that studies the nature of knowledge and what constitutes acceptable knowledge in the field of study. Epistemological assumptions can be regarded as a question of what is (or should be) regarded as acceptable knowledge in a discipline. The central issue of epistemology in social science is the question whether the social world can and should be studied according to the same principles and procedures as the natural

sciences. The answer to that question points the way to the acceptability of the knowledge developed from the research process (Easterby-Smith *et al*. 2002: 28). Therefore, epistemological assumption can be regarded as associated with the nature of knowledge and the methods through which that knowledge can be acquired. There are two epistemological assumptions that will be discussed in this section namely interpretivism/ phenomenological and positivism.

4.1 Interpretivism

According to Saunders *et al.* (2007: 106) interpretivism is an "epistemology that it is necessary for the researcher to understand differences between humans in our role as social actors." Interpretivists researchers are associated as the 'feeling' researchers. This is due to the fact that interpretivists researchers play a role as 'social actors' where they could interpret their everyday social roles in accordance with the meaning given to these roles and interpret the social roles of others in accordance with our own set of meanings (Saunders *et al*. 2007: 106). In addition, interpretivists view that the facts and values are not different and findings are influenced by the researcher's perspectives and values. Interpretivism is also often associated with the view of phenomenology. Phenomenology is a philosophy that refers to the way in which how human make sense of the world around them and how in particular the philosopher should set out preconceptions in his or her grasp of that world (Saunders *et al.* 2007; Bryman, 2004). The concept of phenomenology concerns on how researchers view social phenomena as socially constructed, and is mainly related with creating meanings and obtaining insights into those phenomena.

Some researchers would argue that interpretivist perspectives is highly appropriate in the case of business and management research, particularly in marketing and human resource management (Saunders *et al*. 2007). This is due to the fact that phenomenologists argue that human behaviors must be seen/investigated in their total and must be experienced firsthand to be understood. As claimed by Ritchie and Lewis (2003), the methods of the natural science are not appropriate because the social world (business and management) is not governed by law-like regularities but is mediated through meanings and human agencies. Moreover the causal, mechanistic-oriented models of explanations are inappropriate for the understanding of human behavior. Therefore researchers in social science should gain understanding of meanings using both the participants and researchers understanding.

4.2 Positivism

Conversely, in extensive research strategy the view of positivism is widely accepted and recognized. Positivism assumes that there are social facts with an objective reality apart from the beliefs of individual. As stated by Easterby-Smith *et al.* (2002) state that knowledge is only of significance if it is based on observations of this external reality.

The main ideas of positivists view can be regarded, as the social world exists externally. The positivists approach to research is that the research undertaken as far as possible, in a value-free way. The researchers must be independent and its properties should be measured through objective methods. For example through experimental method – the testing of theory or hypotheses to gradually develops and refines universal 'laws of nature.' Positivist researcher beliefs that there is a clear-cut relationships between things and events in the outside world and people's knowledge of them (Staiton-Rogers, 2006: 80).

Positivist researcher is also known as the 'resource' researcher (Saunders *et al.* 2007). This is due to the fact that positivist researcher attempts to explain and predict what happens in the social world by searching regularities and causal relationships between its constituent elements. Research methodologies in positivist views are influenced by the logic of experimental designs derived from natural science. Research methods like large-scale survey of population or representative sample, formal questionnaires, standardized interviews are used to investigate a wide range of topics. The use of statistical analysis and measures of association and the development of measurement models are significant in this approach.

5.0 ONTOLOGICAL ASSUMPTIONS: SUBJECTIVISM/ CONSTRUCTIONISM VERSUS OBJECTIVISM

Another aspect of research that a researcher should understand is ontology. Ontology is defined as a theory of the nature of social entities (Bryman, 2004: 16). Saunders *et al.* (2007:108) state that ontology is a theory concerning the nature of social phenomena as entities that is to be admitted to a knowledge system. Easterby-Smith *et al.* (2002: 27) note that ontology is assumptions that we make about the nature of reality. Ontology is about the nature of world – what it consists of, what entities operate within it and how they interrelate to each other (Staiton-Rogers, 2006: 79). In brief it can be said that ontological assumptions is regarding the nature of phenomena to be investigated and different ontology make different assumption. In conducting qualitative research strategy researchers are accepting the idea of multiple realities instead of a single reality (Cresswell, 2007). Reality is subjective and multiple as seen by the participants in the study. Burrell and Morgan (1979) in Morgan and Smircich (1980: 492) suggest that the assumptions about the nature of reality (ontology) could be thought in terms of the subjective-objective dimension.

5.1 Subjectivism

Qualitative research tends to be associated with the idea or views that social life is the product of social interactions and the beliefs of the social actors. This idea/view are called as subjectivism. According to Saunders *et al.* (2007: 108) subjectivism refers to beliefs that social phenomena is created from the perceptions and following actions of

those social actors concerned with their existence. This can be considered as a continual process. Thus through the process of social interactions these social phenomena are in continuous revisions and improvements. The core of ontological assumptions on subjectivist approaches to social science is that reality is a projection of human imagination (Morgan and Smircich, 1980: 492).

Table 2 illustrates the summary of 'the network of basic assumptions characterizing the subjective-objective debate within social science.' suggested by Morgan and Smircich (1980: 492).

Table 2 Network of basic assumptions characterizing the subjective-objective debate within social science

	Subjectivist Approaches to Social Science					**Objectivist Approaches to Social Science**
Core ontological assumptions	Reality as a projection of human imagination	Reality as a social construction	Reality as a realm of symbolic discourse	Reality as a contextual field of information	Reality as a concrete process	Reality as a concrete structure
Assumptions About Human Nature	Man as pure spirit, consciousness, being	Man as a social constructor the symbol creator	Man as an actor the symbol user	Man as an information processor	Man as an adaptor	Man as a responder
Basic Epistemological Stance	To obtain phenomenological insight, revelation	To understand how social reality is created	To understand patterns of symbolic discourse	To map context	To study systems, process, change	To construct a cositivist science
Some Favored Metaphors	transcendental	Language game, accomplishment, text	Theater, culture	Cybernetic	organism	machine
Research Methods	Exploration of pure subjectivity	hermeneutics	Symbolic analysis	Contextual analysis of Gestalten	Historical analysis	Lab experiments, survey

Source: Adopted from Morgan and Smircich (1980:492)

Morgan and Smircich (1980: 492) note that the different worldviews of researcher reflects different grounds for knowledge about the social world. For instance if we look at the extremes of the continuum (on the right) in the illustration, "an ***objectivist*** view of the social world as a concrete structure promotes an epistemological stance that stresses on the importance of studying the nature of relationships among the dimensions forming that structure." At the end of the continuum (on the left), the

highly subjectivist view "a reality as a projection of human imagination would argue the positivist grounds of knowledge in favor of an epistemology that stresses the importance of understanding the processes through which human beings concretize their relationship to their world." (Morgan and Smircich, 1980: 492)

Subjectivism is normally related with the term constructionism or social constructionism (Saunders *et al.* 2007: 108). Easterby-Smith *et al.* (2002: 28) state that "the new paradigm which has been developed by philosophers during the last half century, largely in reaction to the application of positivism to the social sciences, stems from the view that 'reality' is not objective and exterior, but is socially constructed and given meaning by people." The concentration on meaning reflects this emphasis on the subjective and constructed nature of events as subjectivism or constructionism places a greater emphasis on micro-interactions as the source from which to gain information about creation of social life (David and Sutton, 2004: 36). The focus of constructivist researcher mainly is on what people think and feel, how they communicate with each other (verbal or non-verbal) and attempts to understand and explain why people have different experience. Thus the central view of constructionism is that the researcher's role is to appreciate/interpret the different constructions and meanings based on people experience.

5.2 Objectivism

Conversely, quantitative research is related to the views in the objectivity of the social world and the idea of causation in social processes. The objectivists belief that "social phenomena and their meanings have an existence that is independent of social actors" (Bryman, 2004: 16). Objectivism is based on the assumptions that social phenomena and the categories that we use in everyday discussions have an existence that is independent or separate from actors. Davies *et al*. (1993) emphasize that the aim of social science is to determine predictable reality in the most objective manner possible. As noted by (Johnson 1987, p. xiii cited in Davis *et al.*1993) "the classical objectivist view of knowledge assumes 'science' produces successive theories that progress ever and ever closer to *the* correct description of reality. And, even though we will never achieve the final, complete account, it is believed that genuine empirical knowledge involves universal logical structures of inferences which results can be tested against theory-neutral 'objective' data." This notion is associated to the belief that social research can adopt methods of the natural sciences, especially the use of numbers to measure relationship between 'things' (David and Suton, 2004: 36).

In brief it can be said that objectivists view about the social world is as concrete and real as the natural world. According to Morgan and Smircich (1980:495) the social world is a hard, concrete, real thing "out there", which affects everyone in one way or another. Objectivism belief that, reality is to be found in the concrete behavior and stresses on the importance of researching the nature of relationship among the elements in their constituents.

6.0 INTELLECTUAL GOALS

Every research strategy, whether qualitative (intensive) or quantitative (extensive) has its own goals. The intellectual goal of research strategy can be considered as 'what is to be achieved at the end of the research process.' The aim of each research strategy differs according to the epistemological and ontological assumptions that underpins the research paradigms. The central idea underlying the paradigm in intensive or extensive research strategy is the question of knowledge creation; how can the findings of one research project can be generalized to another context? The way researchers belief and accept a particular epistemology normally will lead the researcher to employ methods that fit their research questions. Consequently in an attempt to determine how closely or not the paradigms fit the perceived values and needs of the stakeholders of research project, one has to understand the assumptions behind the paradigm used (Sobh and Perry, 2005: 1195).

The main aim of qualitative research is related to understand how people invent structures to help them make sense of what is going on around them (Easterby-Smith *et al*. 2002: 34). By means of the epistemology viewed by qualitative researcher, it means that the researcher makes an effort to get as close as possible to the participants being studied. In terms of ontological assumptions the intensive/qualitative researcher carries out a study with the aim of reporting multiple realities. In practice, the proof of multiple realities comprises the use of multiple quotes based on the actual words from different individuals and offer different perspectives from each individuals (Creswell, 2007: 16).

The primary goal of research in social constructivism view depends on the participants' views of the situation. Therefore constructivist researchers conduct their studies in the "field" where the participants live and work in order to gain understanding what the participants are saying (Creswell, 2007: 18). Researchers cannot be separated from the sense-making processes as because they starting to recognize the theories that they apply to the subjects of their work and must also be relevant to them (Easterby-Smith *et al.,* 2002: 34).

On the other hand quantitative research holds that the positivist believes that research is a neutral, technical process through which researchers reveal or discover knowledge (Lee, 1987: 91). Knowledge is statistically generalized to a population by using statistical analyses of observations about an easily accessible reality. Easterby-Smith *et al.* (2002) state positivism identifies causal explanations and fundamental laws that explain regularities in human social behavior. As Firestone (1987: 16) highlights that primarily quantitative research seeks to explain the causes of changes in social facts, mainly through objective measurements and quantitative analyses. In brief knowledge is generalized using systematic and technical method similar to natural science.

Another aspect that should be seen is the matter of universality of the findings. Through the scientific methods, research findings can be generalized and construct

theoretical statements that are universally accepted. For example, Big Five Personality Dimension is acceptable and universally applicable (Norman, 1988).

7.0 CONCLUSION

This paper has distinguished epistemological, ontological and intellectual goals dealing with both qualitative and quantitative research strategies. Both research strategies are based on the epistemological and ontological assumptions that are mutually exclusive. In fact, both qualitative and quantitative research strategies are useful and important. Certainly different research strategies serve different purposes by different methods with different results. The same research questions can be answered by both research strategies but will produce different findings and generalizations.

Researchers in social sciences have an option in choosing research strategies, even though researchers are often in dilemma in selecting which research strategy that should be employed in their study. Blalock (1984) cited in Lee (1992: 93) emphasizes that "Social sciences, lodged as they are between the natural sciences and humanities, have almost inevitably become battle-ground over the suitability of natural science models and approaches to the study of human behaviors and social processes." Researchers are often trapped between the systematic and objective view on one hand and to be human in the other, in order to understand human behaviors in social processes.

Presently, the methodologies of social sciences research have undergone dramatic changes. The notion that one research strategy is more outstanding than the other research strategy is a myth. Bryman (2006: 113) asserts that the so called "paradigm wars" have been replaced by the era of "paradigm peace." He suggests that the view that qualitative and quantitative research strategies can no longer be considered as incompatible and is significant for three reasons. "Firstly, it removes any lingering doubts concerning whether it is intellectually legitimate to integrate the two approaches. Secondly, the compatibility view marginalizes the epistemological issues and concerns that were at the heart of the paradigm wars, though that is not to suggest that philosophical issues disappear completely. Thirdly, the view that qualitative and quantitative research can be combined, tended to be associated with an uncoupling of research methods from philosophical positions." (Bryman, 2006: 113).

There is an alternative to research strategy namely mixed-methods research. Mixed-methods research strategies refer to combining qualitative and quantitative methods. The goal of mixed method is not to take the place of the former approach but attempts to maximize the strengths and minimize the weaknesses of qualitative and quantitative research strategies (Johnson and Onwuegbuzie, 2004: 15). According to Tashakkori and Teddlie (1998), pragmatism can be regarded as a foundation of mixed method research. They suggest that pragmatism rejects the incompatibility thesis and it presents as a very practical and applied research philosophy. Moreover, pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as

different form of data collection and analysis. (Cresswell, 2003). Thus, mixed methods can be seen as more practical and applicable in conducting study in social sciences rather than employing a single approach.

Even though it would be suggested that mixed methods are more practical and applicable, it is very subjective to say which method is the best method in social science. This is due to the fact that there is no single approach that has a total view of reality of the social world. Mixed methods strategies should not be considered as a panacea to every research problem. Finally, I would suggest here that there is no one research strategy that is better than the alternatives. The most important thing is the adopted techniques are more useful and appropriate in one or another context. In some, intensive/qualitative research strategy is more appropriate, and some may employ extensive/quantitative research or alternatively mixed method is more suitable in other situations.

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