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## Research Methodologies: An Extensive Overview

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## Research Methodologies: An Extensive Overview



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### ABSTRACT

Given the complexity of research - researchers, particularly novice researchers often perplexed to make research methodology choice. A choice which can have a profound effect upon the way a research is designed and the outcome of the research. Literature on research methodologies is voluminous, however, there has been little effort to discuss the three main research methodologies in a single manuscript. Grounded in an extensive literature review this paper discusses quantitative, qualitative and mixed research methodologies, and highlights the pros and cons of each methodology. The attributes of each research methodology are also discussed.



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## INTRODUCTION

The word research is composed of two syllables, re and search. The prefix “re” means a new or over again and the verb “search” means to understand, to investigate or to seek out. The term research refers to a process of systematic, methodical and ethical steps to solve a problem, to understand a phenomenon, to answer a question or to establish facts (Neville 2007). The research process is a planned action which involves collecting, analysing and interpreting information to answer a question or to understand a particular phenomenon (Johnston 2010). The research process requires the researcher to be careful, systematic, patient and ethical. Based on Clarke (2005) “a research is going beyond personal experience, thoughts, feelings, and opinions that do not refer to other sources of information”.

There are different types of research as outlined by Clarke (2005) and Neville (2007). Table 1 below defines the main types of research.

**Table 1: Main types of research**

Research Type	Definition
Exploratory	Exploratory research explores a phenomenon which has not been studied before. The aim is to open-mindedly explore data, to reveal the structure and the pattern of the data and to foster hypotheses for the purpose of further research. The main exploratory research data collection methods are surveys, observations, and literature review.
Descriptive	Descriptive research is a type of research which describes the nature and, the attributes of a subject.
Analytical	Analytical research follows descriptive research which analysis the causes and mechanisms of a phenomenon.
Predictive	Predictive research is a type of research where the research findings are used as a source for future prediction.
Historical	Studying the past events
Comparative	Associated with historical research to compare people’s experiences of different societies.
Correlation	Studying the correlation/association between the two phenomenon
Experimental	Studying a subject with controlled variables
Evaluation	Evaluation of complex social issues
Action	Studying the effects of intervention by the researcher in a real world situation
Ethnogenic	Researchers are interested in how subjects of the research theories about their own behaviour rather than imposing a theory from outside

According to Creswell (2010), the process of a research entails five aspects. First, the research *paradigm*- the research methodologies. Second, *ontology*-the knowledge of the research. Third, *epistemology* the way the research knowledge is driven. Fourth, *axiology* the value of the research knowledge. Fifth, *rhetoric* how the research knowledge is written Edmondson & Mcmanus (2007) refers to coherence between these five elements of research as “research fit”.

Fundamental to the research fit is identifying and understanding the research methodology. As pointed by Lan (2002) identifying the appropriate research methodology is fundamental to research success. Ghanbary (2008) mentioned that an understanding of the research methodology provides the necessary background for guidance in carrying out any research. The choice of research methodologies is important because it impacts the validity and generalizability of the results (Yang, Wang & Su 2006). MacDonald and Headlam (2008) proposed that “without the appropriate design and use of research methods, we are unlikely to gather quality information”.

In recent years, there has been an increasing amount of literature on research methodology, and different types of methodology. There is also a large volume of published studies guiding researchers on the choice of a research methodology. However, a major problem with this literature is the “methodology debate”. This debate is three sided; quantitative platform, qualitative platform and mixed platform where quantitative and qualitative platforms are conciliated. This methodology debate is not new (Johnson & Onwuegbuzie 2009). Sale, Lohfeld & Brazil (2002), Cameron (2011) and Small (2011) claimed that methodology debate flourished in the 1970s and 1980s. De Lisle (2011) argued that quantitative approach dominated the research in many fields prior to 1980s and it was during this decade that qualitative approach became viable choice for many researchers. De Lisle (2011) referred to this age as the golden age for qualitative approach.

Other authors such as Johnson, Onwuegbuzie & Turner (2007) asserted that this debate goes back to ancient Greek philosophy. In their view, the extreme of Plato’s methodological view is labelled as quantitative research and the methodological view of Sophists is labelled as qualitative research. The balance of these extremes which is the view of Aristotle is labelled as mixed method.

The heart of the methodology debate is whether each particular methodology is superior to the other (Small 2011) or as pointed out by Krauss (2005) the heart of the quantitative-qualitative debate is philosophical, not methodological. The superiority of the methodology debate is based on epistemology which forms the foundation and validity of knowledge as pointed out by Sale, Lohfeld & Brazil (2002) the key issues in this debate are ontological and epistemological.

Quantitative methodologists vociferously argue in favour of quantitative approach as a valid research approach claiming that reality/truth can be measured or quantified. In contrary, qualitative methodologists oppose this claim and state that understanding a phenomenon is only possible through the meanings conveyed by people. Furthermore, quantitative methodologists argue that through quantification a phenomenon can be explained, whereas, qualitative methodologists become immersed in the context of the research. Quantitative methodologists believe in empiricism whereas, qualitative methodologists believe in subjectivism. Quantitative method is portrayed as superior to qualitative method, whereas some methodologist argues for qualitative method to answer a broad range of social and behavioural questions which cannot be answered by quantitative means.

Clarke (2005) distinguished qualitative and quantitative methods in four aspects they are; ontology (nature of reality), epistemology (relationship that being researched, the philosophy of knowledge), axiology (role of values), rhetorical (use of language/words) and methodology (overall process of research). Qualitative and quantitative methods diverge in a number of important respects. The two methods contrast in terms of research questions, data type, data collection, data analysis, and presentation.

The quantitative paradigm is based on positivism as it is characterised by empirical research (Sale, Lohfeld & Brazil 2002). In contrast, the qualitative paradigm is based on interpretivism as it is characterised by interpretation of words (Sale, Lohfeld & Brazil 2002).

Mixed methodologists surfaced as the third platform during this quantitative and qualitative debate. According to Tashakkori and Teddlie (cited in Cameron 2011), mixed method has been adopted as the de facto third alternative or third methodological movement. In their major study, Tashakkori & Teddlie (2010) called the mixed method as a third methodology choice whereas, Johnson & Onwuegbuzie (2009) called mixed method a research paradigm whose time has come.

Creswell (2010) claimed that the concept of mixed method originated in 1959 when Campbell and Fisk used mixed method to study validity of psychological traits. Although mixed method is not new, it is a new movement that has drawn attention in the past decade or so particularly in social science.

The philosophical position of mixed method is summarised by Johnson and Onwuegbuzie (cited in Cameron 2011) “The paradigm wars of the 1980s have thus turned to paradigm soup, and organisational research today reflects the paradigm diversity of the social sciences in general. It is not surprising that this epistemological eclecticism has involved the development of novel terminology; innovative research methods; non-traditional forms of evidence; and fresh approaches to conceptualization, analysis, and theory building”.

There are some advocates of mixed method and some critical of mixed method. For example, based on Sale, Lohfeld & Brazil (2002) the arguments for mixed method research are, first, the two approaches can be combined since they share the goal of understanding a phenomenon. Second, the two approaches are attuned. Third, mixed method is useful in many research domains. Fourth, the researcher should not be preoccupied with the qualitative-quantitative debate. Bazeley (2004) maintains that mixed methods research should not be considered inherently valid, instead, trustworthiness and credibility must be assured through the application of rules and procedures and attention to quality criteria. Indeed, the development of quality criteria has been a concern for the mixed methods community for some time. Sale, Lohfeld & Brazil (2002) and Johnson & Onwuegbuzie (2009) have argued that the most salient validity issues faced by mixed methods research were representation, legitimation, and integration. *Representation* is the difficulty of representing lived experience through text and numbers; *legitimation* refers to the trustworthiness of inferences; and *integration* to the multiplicative and additive threats that result from combining methods.

Needless to say is that this debate will continue for years to come. Within this methodological debate, a novice researcher may baffle how to initiate a research methodology. Groenewald (2004) claimed that the task of selecting a research methodology is challenging for novice researchers as they can be overwhelmed by the plethora of research methodologies.

The paper has been divided into four parts. The first part deals with quantitative methodology, including the advantages and limitations of the quantitative methodology. The second part deals with qualitative methodology including advantages and limitations of the

qualitative methodology. The third part discusses the mixed methodology the advantages and the limitation of mixed method are discussed. This is followed by an account of the attributes of the three methodologies.

### **Quantitative Research**

Quantitative research is the process of collecting and analysing numerical data to explain a phenomenon. Quantitative research is also known as traditional, positivist, experimental and empirical research (Clarke 2005). Quantitative data is mainly presented as numbers (Lan 2002).

The nature of quantitative research is objective and the phenomenon under the study is independent of researcher's thoughts and relies heavily on statistical analysis.

The argument for quantitative research is that in some, occasions, numbers can provide more reliable information than words.

According to Lan (2002), quantitative research methods are based on large randomised sample number, statistical inference and few interpretations. Quantitative research design can be either descriptive or experimental. The subsequent sections explicate the main advantages and the limitations of quantitative approach. There are four types of quantitative research design namely descriptive, correlational, cause-comparative and experimental.

### **Strengths of Quantitative Research**

The main strengths of quantitative research are as follow:

- Quantitative research findings can be generalised to a large population as the data is based on random sample selection.
- Quantitative research findings are based on precise and quantitative data and hence, are accurate and reliable.
- Quantitative research finding can be used to make quantitative predictions.
- Quantitative research can be used to analyse large quantity of data
- Quantitative research is useful to study a large population.

- Quantitative researcher is independent and the research is objective.
- Quantitative data collection is relatively quick.
- Quantitative data analysis is not complicated, data is verifiable and the statistical software's make the analysis relatively quick.

### **Limitations of Quantitative Research**

The main limitations of quantitative research are as follow:

- Quantitative research on human phenomena factors such as motivation and perception can provide limited results.
- Quantitative research data collection is labour intensive.
- Quantitative research data analysis requires data cleaning.
- Quantitative research requires the knowledge of statistics and statistical softwares.
- Quantitative research requires more time to analyse as the sample size is large.

### **Qualitative Research**

The argument for qualitative research can be based on this famous quote of Albert Einstein "Not everything that counts can be counted, and not everything that can be counted counts". Dadich & Fitzgerald (2011) suggested that there is no universal definition of qualitative research. Qualitative research can be defined as the process of collecting and analysing textual data to get an insight of the interpretations conveyed by people about a phenomenon which cannot be possible with quantitative research. Qualitative research is mainly used to understand human behaviour factors (Lan 2002). Qualitative research is subjective and the aim of qualitative research is to understand a social phenomenon (Hancock 2002). Qualitative research is also known as constructivist, naturalistic, interpretive, post-positivist, post-modern (Clarke 2005). Qualitative methods occupy an ambivalent position in social science.

Qualitative data is presented as words, sounds and images (Lan 2002). The sample for qualitative method is relatively small. Data collection requires interaction between the researcher and the researched. The nature of data in qualitative method is textual, very



detailed and information rich (Moriarty 2011). The approaches of qualitative data analysis are; thematic analysis, grounded theory, discourse analysis and others (Wood 2011). There is no single best way to analyse qualitative data, the analysis is subject to the research question, the need for the finding of the research, the context of the research and the resources available for the research (Taylor-Powell & Renner 2003). There are four types of qualitative research design namely phenomenology, ethnography, grounded theory and case study (Hancock 2002). The main methods of collecting qualitative data are; interviews, focus group and observation (Hancock 2002).

In his article, Folkestad 2008 has identified four major paradigms in qualitative method. Table 2 below describes the four major paradigms in qualitative research.

**Table 2: The four types of qualitative paradigm-Adapted from (Folkestad 2008)**

Paradigm	Characteristics	Status of Data	Data collection method
Naturalistic Positivism	The social reality is real. Hence, it is important for the researcher not to affect and influence the data analysis. The focus of this paradigm is to answer the “what” of a reality.	Facts about behaviour and attitudes of people	Random samples Standard questions Tabulations
Ethnomethodology – Constructionism	The meaning of reality is produced through interaction between the researcher and the researched. The focus is on “how” of a reality.	Mutually constructed	Unstructured Open- ended interviews
Emotionalism	The emotional attributes of the researcher and the researched play a role in creating the reality.	Authentic experience	Any interview treated as topic.
Post-modernism	Research constructs the reality by producing description on it.	-	Deconstructing texts

Naturalistic-Positivism dominates these paradigms as the analyses are based on standardised procedure (Folkestad 2008).

Based on Traynor (2007) prominent characteristics of qualitative method are; naturalistic, researchers as human instrument, inductive data analysis, descriptive reports and special criteria for trustworthiness. The subsequent sections explicate the main advantages and the limitations of qualitative approach.

### **Strengths of Qualitative Research**

The main strengths of qualitative research are as follow:

- Qualitative research provides complex textual descriptions of how people experience a phenomenon.
- Qualitative research can be used to explore sensitive topics.
- Qualitative research can be used to explore culturally defined experience.
- Qualitative research can provide valuable insight into a phenomenon.
- Qualitative research provides a depth understanding of a complex phenomenon.
- Qualitative research is useful to study a case.
- Qualitative research provides an insight into people's behaviour, perception and experience.
- Qualitative research data is generally small, convenience and cost effective to collect.

### **Limitations of Qualitative Research**

The main limitations of qualitative research are as follow:

- Qualitative research analysis is based on the meanings conveyed by the participants and the researchers which might not be generalised to a large population due to the lack of statistical testing.

- Qualitative research sample is small and is not selected at random which cannot be true representative of the population.
- Qualitative research findings cannot be used to make quantitative predictions.
- Qualitative research cannot be used to test hypothesis.
- Qualitative research findings might have low credibility.
- Qualitative research data collection is complex.
- Qualitative research data analysis can be time consuming.
- Qualitative researchers do not follow a common procedure to analyse qualitative data.
- Qualitative researcher can influence the results.
- Qualitative research findings reliability and the validity depend on researchers' skills and experience.

### **Mixed Research**

Different definitions of mixed methodology have been engendered by leading methodologists in this field. The focuses of these definitions are on methods, philosophy and research design. For example, in their paper Johnson, Onwuegbuzie and Turner (2007) have provided 15 definitions of mixed method research by leaders in this field. There are similarities and disparities between these definitions. In his definition, Bezeley (2002) distinguished mixed method from multi-method. Based on Bezeley (2002) in a multi-method, the researcher uses different methods in parallel or sequence whereas, in a mixed method the researcher integrates different methods or approaches in a single study. Others like Valerie Caracelli, Huy Chen, John Creswell, Steve Currall, Marvin Formosa, Jennifer Greene, Al Hunter, Burke Johnson and Anthony Onwuegbuzie, Udo Kelle and Abbas Tashakkori and Charles Teddlie defined mixed method as a method where qualitative and quantitative methods are integrated systematically in a single study.

The definition of mixed method provided by Johnson, Onwuegbuzie & Turner (2007) reflects these definitions "mixed method research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches".

Johnson and Onwuegbuzie (2009) and Tashakkori & Teddlie (2010) defined the mixed method as a method where the researcher mixes quantitative and qualitative research techniques, methods, approaches, and concepts in a single research project.

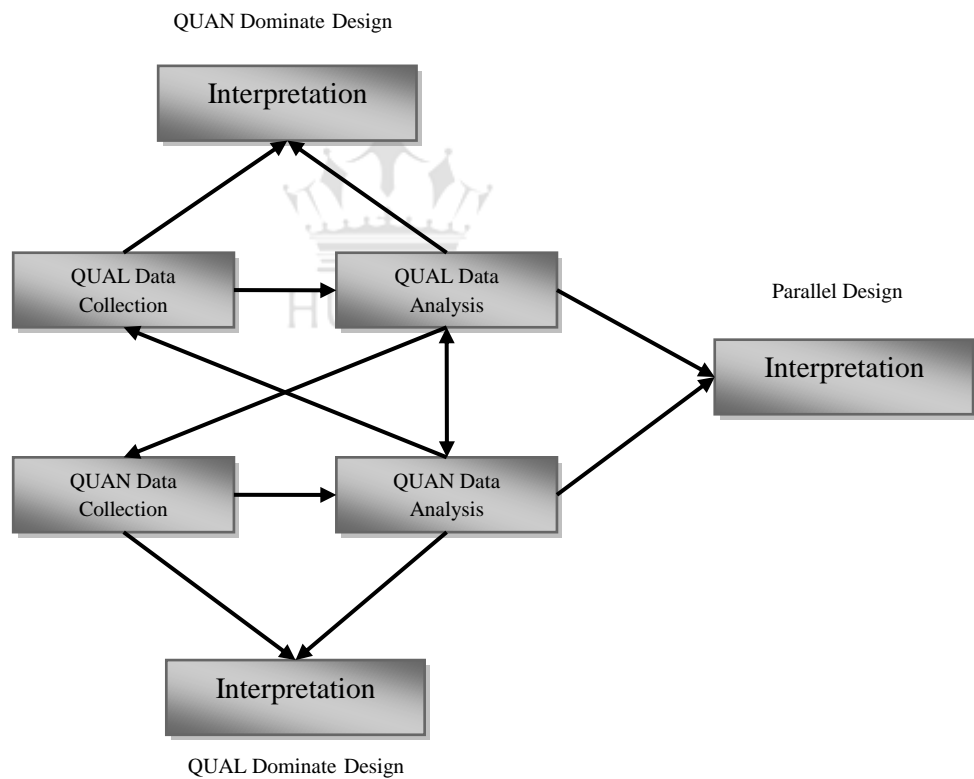
The aim of this chapter is not to provide an exhaustive definition of mixed research. In this research mixed method is defined as a method where the researcher amalgamates the different taxonomies of the qualitative and quantitative methods for the purpose of a research question.

Mixed research is a novel and a vibrant research methodology which is getting momentum as the third choice of research methodology. Research on mixed methodology is still in progress and according to Leech (2012) recently there is a dearth of information on writing a mixed method. A major part of the literature on mixed research is concentrated on arguments for and against the mixed research. In the past two decades, mixed method is rapidly evolving both conceptually and practically. Groenewald (2004) pointed that the methodologists' views on the choice of research methodologies often contradict one another. For examples, De Lisle (2011) disputed against the mixed method by summarising the part of the literature which portrays mixed method as a bungling method. Some of the unconstructive idioms used against mixed method are poor quality research masquerading and, a violation of basic assumption of both methodologies. Whereas, Sale, Lohfeld & Brazil (2002) have given the following reasons are provided that why quantitative and qualitative research can be combined. First, the goal of the two researches is to understand a phenomenon and answer a research question. Second, some areas of social science require a broad spectrum of qualitative and quantitative methodologies to be explained. Third, a mixed researcher should be derailed by the qualitative-quantitative methodology debate as this debate will not end soon. Contradiction to these reasons Sale, Lohfeld & Brazil (2002) still stressed that the two researches cannot be combined for cross-validation because they do not study the same phenomenon. However, they can be combined for complementary purpose. As quoted in Sale, Lohfeld & Brazil (2002) by Cary 1993, quantitative and qualitative techniques are merely tools can be integrated to answer a question. The merits of mixed methods critically questioned by those methodologist that that voted against the varied use of this method such as Sale, Lohfeld & Brazil (2002) claimed on their paradigmatic assumption the two approaches do not study the same phenomenon. Furthermore, they argued that a research cannot be both a positivist and/or constructivist.

According to Leech (2012) since the two approaches do not study the same phenomenon there for, combining them for cross-validation purpose is a viable option (cross-validation refers to combining the two approaches to study the same phenomenon). The subsequent section discusses the types and taxonomies of mixed research followed by the advantages and disadvantages of mixed research.

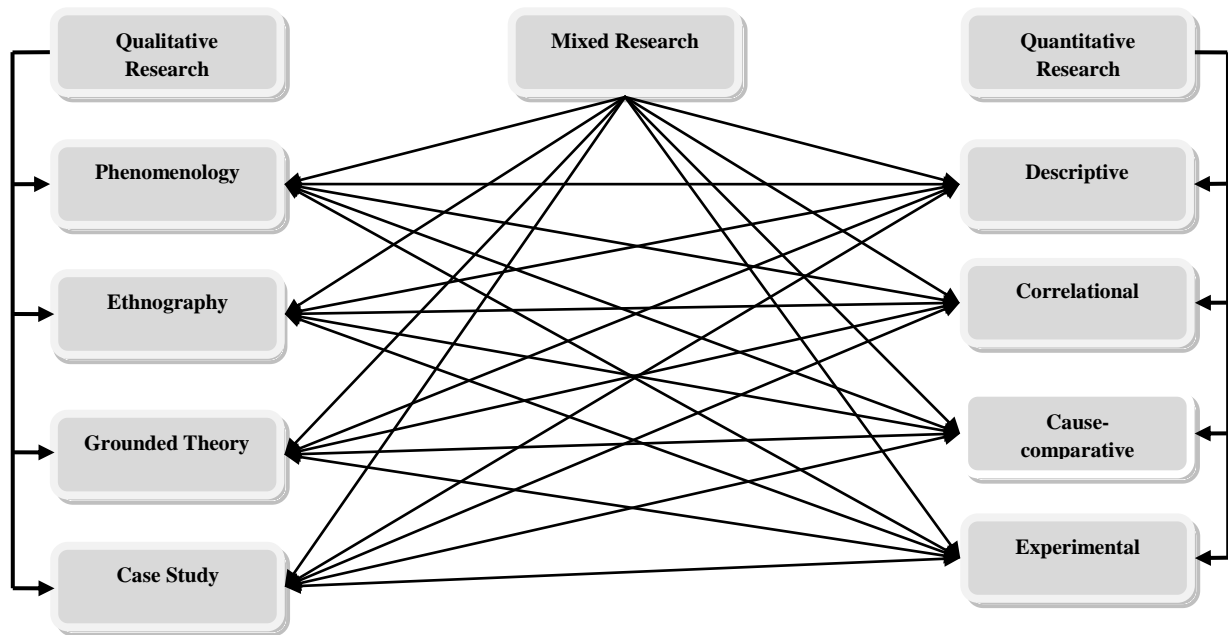
### Types and Taxonomies of Mixed Research

Johnson, Onwuegbuzie and Turner (2007), Creswell (2010) and Bryman & Bell (2011) classified three dominances of mixed research, namely the qualitative dominant, quantitative dominant and equal status. Bryman & Bell (2011) claimed that quantitative method still dominates mixed method. This means quantitative dominant is a preferable mixed research. The following figure illustrates the three dominances of mixed methodology.



**Figure 1: The three types of mixed research**

Based on the literature on research methodologies, this chapter proposes the following figure which depicts the 32 permutations of mixed research. These 32 permutations can be created by mixing the four main types of quantitative research and the four main types of qualitative research.



**Figure 2: 32 permutations of mixed method**

In their seminal article Angell & Townsend (2011) identified three types of mixed research.

*Triangulation Mixed Research:* The researcher mixes qualitative and quantitative data or methodologies in a single research. This will enhance the credibility and validity of the research.

*Explanatory Mixed Method Design:* Qualitative research is followed by a quantitative research.

*Exploratory Mixed Method Design:* Quantitative research is followed by qualitative research.

In their study Angell & Townsend (2011) and Cameron (2011) identified the following three characteristics of the mixed method:

- Quantitative and qualitative research is applied to a single study.
- Quantitative and qualitative data collection is involved.
- Quantitative and qualitative research is mixed in a sequential or concurrent order.

Cameron (2011) suggested the five Ps frameworks for mixed method which can assist the mixed method researchers with the fundamental elements of a mixed method starter kit

namely, paradigms, pragmatism, praxis, proficiency, and publishing. The following table provides an overview of each of these Ps.

**Table 3 the five Ps frameworks for mixed method**

Five Ps	Approaches to research
Paradigm	A philosophical approach to the research
Pragmatism	A practical approach to the research
Praxis	A conceptual approach to the research
Proficiency	A knowledgeable approach to the research
Publishing	A presentation approach to the research

### Advantages of Mixed Research

This research will be benefited by the numerous advantages of the mixed method. Based on Bryman (2007), De Silva (2010), Tashakkori and Teddlie (2010) and De Lisle (2011) some of the benefits that the mixed method can offer in research are:

- Mixed research provides insight which could not be offered by a mono-method.
- Mixed research can enhance the validity of results, theory building, hypothesis testing and generalisations.
- Mixed research provides a more complete picture of a research.
- Mixed research results are less biased.
- Mixed research can benefit from the counterbalance of the advantages and disadvantages of qualitative and quantitative research.
- Mixed research facilitates different dimensions of thinking for the researcher.

- Mixed research provides the opportunity for presenting a greater range of different views.
- Mixed research provides better/stronger conclusions.
- Mixed research provides the opportunity for a novice researcher to capitalise on the experience of both methods.

### Limitations of Mixed Research

Some limitations of mixed research are as follow:

- Mixed research requires the knowledge of both quantitative and qualitative methodologies.
- Mixed research is time consuming and may cost higher than a mono-research.
- Mixed research finding may be contradictive due to contradiction of quantitative and qualitative findings.

Traynor (2007) suggested the following solutions overcome the limitations of mixed research. These solutions are employed in this research.

**Table 4: Adapted from Traynor (2007)**

Criticism	Solution
Not replicable	Different ways to address validity/reliability (systematic/ rigorous/ focus on 'value').
Can't generalize	Different purpose. Explain purpose (meaning/ interpretation). Can via theory. Theoretical verification.
Subjective	Disciplined researcher. Rapport. Trust. Details in method section. Not purely subjective-training, structured methods, subjective to verification. Multiple coders.



**The Attributes of Quantitative, Qualitative and Mixed Research**

**Table 5 below outlines the main attributes of quantitative, qualitative and mixed research.**

Attributes/ Research types	Quantitative Research	Qualitative Research	Mixed Research
Goal	To predict and control	To understand (what, how, and why)	Depends on the research question
Mode of Inquiry	Structured	Unstructured	Both structured and unstructured
Scientific method	Deductive or “top-down”. The researcher tests hypotheses and theory with data	Inductive or “bottom-up”. The researcher generates new hypotheses and grounded theory from data collected during fieldwork	Deductive, inductive/both
Logic	Deductive	Inductive	Inductive or deductive
View of human behaviour	Behaviour is regular and predictable	Behaviour is fluid, dynamic, situational, social, contextual, and personal	Behaviour can be predictable and unpredictable
Most common research objectives	Description, explanation, and prediction	Description, exploration, and discovery	Multiple objectives
Focus	Narrow angle lens, testing specific hypotheses	Wide-angle and “deep-angle” lens, examining the breadth and depth of phenomenon	Multi-lens focus
Nature of observation	Study under controlled condition	Study under somewhat flexible condition	Study under more than one condition
When to use it?	<ul style="list-style-type: none"> <li>- To get a broad comprehensive understanding of the situation.</li> <li>- To get socio-demographic characteristics of the population.</li> <li>- To compare relations and correlations between different issues.</li> <li>- When accurate and precise data is required.</li> <li>- To produce evidence about the type and size of problems.</li> <li>- When the assessor knows clearly in advance what he/she</li> </ul>	<ul style="list-style-type: none"> <li>- When in-depth understanding of a specific issue is required.</li> <li>- To understand behaviour, perception and priorities of affected community.</li> <li>- To explain information provided through quantitative data.</li> <li>- To emphasize a holistic approach (processes and outcomes).</li> <li>- When the assessor only know roughly in advance what he/she is looking for.</li> </ul>	<ul style="list-style-type: none"> <li>- To get a breadth and depth understanding of a phenomenon.</li> <li>- To answer a question from quantitative and qualitative perspectives.</li> </ul>

	is looking for		
Form of data	Numerical	Textual	Numerical and textual
Researcher's role	Independent	Immersion	Independent and immersion
Research language	Formal, based on set definitions, impersonal voice, use of accepted quantitative words	Informal, evolving decisions; personal voice; use of accepted qualitative words.	A combination of formal and informal; use accepted quantitative and qualitative words.
Form of data collection	Surveys Questionnaires Randomized controlled trials Systematic review	Surveys and interview	Multiple forms
Data analysis	Statistical analysis, descriptive and inferential	Thematic, pattern and conceptualise analysis	Concurrent analysis or sequential analysis
Results	Generalizable	Insightful findings	Collaborative results
Paradigm	Positivist: This paradigm is characterised by empirical research. The ontological position of this paradigm is that truth is objective and the epistemologically position of this paradigm is that the researcher and the researched are independent.	Interpretive: This paradigm is characterised by interpretivism/constructivism. The ontological position of this paradigm is that truth is subjective and the epistemologically position of this paradigm is that the researcher and the researched interdependent.	Pragmatist
Assumptions	Problems can be defined a priori. The complexity of social situations can be reduced to a string of variables which are clearly operationalized. There is a reliance on controlled experimentation. Events can be explained in terms of cause and effect. There is one 'right' interpretation.	There is a focus on exploring the dynamics of interactions with the emphasis on the world as a socially constructed reality that involves multiple perspectives. The perceptions and values of all the participants in a situation are needed in order to explore the various possible interpretations.	This approach is more capable of handling the complexity of modern society and technology. The focus is on practical problems rather than on issues of reality and theories of society. It acknowledges the weakness of current evaluation tools.

Table 5: The main attributes of quantitative, qualitative and mixed research (Compiled from Sale, Lohfeld & Brazil 2002, Holden 2004, Spratt, Walker & Robinson 2004, Clarke 2005, Traynor 2007, MacDonald & Headlam 2008, Angell & Townsend 2011).

## CONCLUSIONS

This paper has given an account of research methodology debate and the three main research methodologies. The findings from this study make several contributions to the current literature. The paper began by introducing the concept of methodology debate which will continue for the years to come. Then the paper discussed the three main research methodologies namely; quantitative, qualitative and mixed, and highlighted their pros and cons. The last part of this paper synthesised the three types of the research and outlined their attributes.

## REFERENCES

1. Angell, B & Townsend, L 2011 'Designing and Conducting Mixed Methods Studies' *Institute for Health, Health Care Policy and Aging Research of Rutgers*, The State University of New Jersey, viewed 1 November 2016, <[www.sswr.org/Designing%20and%20Conducting%20Mixed%20Method](http://www.sswr.org/Designing%20and%20Conducting%20Mixed%20Method)>.
2. Ashworth, D, P 2000 'Qualitative Research Methods', viewed 1 November 2016, <[http://www.scielo.cl/scielo.php?script=sci\\_arttext&pid=S0718-07052000000100007](http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0718-07052000000100007)>.
3. Bazeley, P 2002 'Issues in Mixing Qualitative and Quantitative Approaches to Research', viewed 5 September 2016, <from [www.researchsupport.com.au/MMIissues.pdf](http://www.researchsupport.com.au/MMIissues.pdf)>.
4. Belli, G 2008, 'Chapter four: Nonexperimental Quantitative Research', viewed 5 November 2016, <[http://media.johnwiley.com.au/product\\_data/excerpt/95/04701810/0470181095-1.pdf](http://media.johnwiley.com.au/product_data/excerpt/95/04701810/0470181095-1.pdf)>.
5. Better Assessment and Better Aid 2012, 'Qualitative and Quantitative Research Techniques for Humanitarian Needs Assessment' viewed 10 November 2016, <[reliefweb.int/.../qualitative-and-quantitative-research-techniques-humanity](http://reliefweb.int/.../qualitative-and-quantitative-research-techniques-humanity)>.
6. Branka, K, S & Grant, O 2010, 'Beyond the qualitative-quantitative distinction: Some innovative methods for business and management research', *International Journal of Multiple Research Approaches*, vol 5 (3), pp 290-300, viewed 10 November 2016, <[bilby.unilinc.edu.au/dtl\\_publish/42/34284.html](http://bilby.unilinc.edu.au/dtl_publish/42/34284.html)>.
7. Bricki, N 2007, 'A Guide to using Qualitative Research Methodology' *Medecins Sans Frontieres*, viewed 15 November 2016, <[fieldresearch.msf.org/msf/.../Qualitative%20research%20methodology.p](http://fieldresearch.msf.org/msf/.../Qualitative%20research%20methodology.p)>.
8. Bryman, A 2004, *Social Research Methods*, 2nd edn, Oxford University Press, New York.
9. Bryman, A 2007, 'Barriers to Integrating Quantitative and Qualitative Research', *Journal of Mixed Methods Research*, vol 1 (8), viewed 8 September 2016, <[mmr.sagepub.com/content/1/1/8.abstract](http://mmr.sagepub.com/content/1/1/8.abstract)>.
10. Bryman, A & Bell, E 2011, *Business Research Methods*, 3rd edn, Oxford University Press, New York.
11. Cameron, R 2011, 'Mixed methods in business and management: A call to the first generation', *Journal of Management and Organisation*, vol.17, pp245-267, viewed 12 November 2016, <<http://www.voced.edu.au/content/ngv46666>>.
12. Cameron, R 2011, 'Mixed Methods Research: The Five Ps Framework', *The Electronic Journal of Business Research Methods*, vol 9 issue 2, viewed 12 November 2016, <[www.ejbm.com](http://www.ejbm.com)>.
13. Caroline, B 2011, 'Using a Mixed Methods Approach to Enhance and Validate your Research' *Brightwater Group Research Centre Manager & Adjunct Senior Lecturer*, Noth Dame University, viewed 11 November 2016, <[www.nd.edu.au/.../research/.../using\\_mixed\\_methods\\_approach\\_to\\_enha](http://www.nd.edu.au/.../research/.../using_mixed_methods_approach_to_enha)>.

14. Cassel, C, Buehring, A, Symon, G & Johnson, P 2006, 'Qualitative methods in management research: an introduction to the themed issue', *Management Decision*, vol 44 No 2, viewed 10 November 2016, <ProQuest Central>.
15. Chapter 1 2010, 'Introduction to Quantitative Research', viewed 12 November 2016, <www.sagepub.com/upm-data/36869\_muijs.pdf>.
16. Chapter 1: Qualitative Research: Defining and Designing 2012, viewed 11 November 2016, <www.sagepub.com/upm-data/48453\_ch\_1.pdf.>
17. Chapter 1: The Nature of Mixed Methods Research 2010, viewed 20 November 2016, <www.sagepub.com/upm-data/35003\_Chapter1.pdf.>
18. Chapter 2: Quantitative, Qualitative, and Mixed Research 2002, viewed 20 November 2016, <www.southalabama.edu/coe/bset/johnson/lectures/lec2.pdf>.
19. Chapter 3: Choosing a Mixed Methods Design 2010, viewed 20 November 2016, <www.sagepub.com/upm-data/35066\_Chapter3.pdf.>
20. Chapter 10 2011, 'Qualitative Data Analysis', viewed 20 November 2016, <www.sagepub.com/upm-data/43454\_10.pdf.>.
21. Clarke, R, J 2005, 'Research Models and Methodologies', University of Wollongong, viewed 22 November 2016,< www.uow.edu.au/content/groups/public/@web/.../doc/uow012042.pdf>.
22. Collis, J & Hussey, R 2003, *Business Research: A practical guide for undergraduate and postgraduate students*, 2nd edn, Palgrave, New York.
23. Cooper, D, R & Schindler, P, S 2011, *Business Research Methods*, 11th edn, McGraw-Hill Irwin, New York.
24. Creswell, J, W 2010, *Research Design: Qualitative, Quantitative, and mixed methods approaches*, 2nd edn, Sage Publications, California.
25. Dadich, A & Fitzgerald A 2011, 'On Line Module 1: Qualitative Research', University of Western Sydney.
26. Dadich, A & Fitzgerald A 2011, 'On Line Module 3: Action and Engaged Research', University of Western Sydney.
27. De Lisle, J 2011, 'The Benefits and Challenges of Mixing Methods and Methodologies: Lessons Learnt from Implementing Qualitatively Led Mixed Methods Research Design in Trinidad and Tobago', *Caribbean Curriculum*, vol 19, pp 87-120, viewed 15 November 2016, <uwispace.sta.uwi.edu/.../Mixing%20Methods%20and%20Methodologies>.
28. De Silva, T, A, 2010, 'Benefits of Mixed Methods in Environmental Reporting Research', viewed 10 September 2016, <from apira2010.econ.usyd.edu.au/.../APIRA-2010-147-DeSilva-Mi>.
29. Doyle, J, K 2008, 'Face-to-Face Surveys', Department of Social Science and Policy Studies Worcester Polytechnic Institute, viewed 15 November 2016,<https://www.wpi.edu/Images/CMS/.../Doyle\_-\_Face-to-Face\_Surveys.pdf.>
30. Easterby-Smith, M, Thorpe, R, & Jackson, P 2012, *Management Research*, 4th edn, Sage, London.
31. Edmondson, A, C & Mcmanus, S, E, 2007, 'Methodological Fit in Management Field Research', *Academy of Management Review*, vol 32 (4), pp 1155-1179, viewed 15 November 2016, <users.business.uconn.edu/.../1%20Theory%20and%20research%20desig.>.
32. Family health international 2006, 'Module1: Qualitative Research Methods Overview', viewed November 2016, <www.ccs.neu.edu/course/is4800sp12/resources/qualmethods.pdf>.
33. Folkestad, B 2008, 'Analysing Interview Data: Possibilities and Challenges', Euroshere Working Paper Series, viewed 20 November 2016, <http://eurosphere.uib.no/knowledgebase/workingpapers.htm>.
34. Ghanbary, A 2008, *Collaborative business process engineering (CBPE) across multiple organisations*, thesis, University of Western Sydney, viewed 20 November 2016, Australasian Digital Thesis database.
35. Gokturk, E 2004, 'What is "paradigm"?' Department of Information, University of Oslo, viewed 21 November 2016, <folk.uio.no/erek/essays/paradigm.pdf.>
36. Groenewald, T 2004, 'A Phenomenological Research Design Illustrated', *International Journal of Qualitative Methods*, vol 3(1). Article 4, viewed 20 November 2016, <http://www.ualberta.ca/~iiqm/backissues/3\_1/pdf/groenewald.pdf>.
37. Hair Jr, J,F, Babin, B, Money, A, H & Samouel, P 2003, *Essentials of Business Research Methods*. Wiley, United States of America.

39. Hallebone, E & Priest, J 2009, *Business and Management Research*, Palgrave, China.
40. Hancock, B 2002, 'An Introduction to Qualitative Research', Trent Focus for Research and Development in Primary Health Care, viewed 11 November 2016, <[https://www.icgp.ie/.../5\\_Introduction%20to%20qualitative%20research](https://www.icgp.ie/.../5_Introduction%20to%20qualitative%20research)>.
41. Holden, M, T 2004, 'Choosing the Appropriate Methodology: Understanding Research Philosophy', Waterford Institute of Technology, viewed 1 November 2016, <[repository.wit.ie/.../Choosing\\_the\\_Appropriate\\_Methodology\\_Understan...](repository.wit.ie/.../Choosing_the_Appropriate_Methodology_Understan...)<
42. Jankowicz, D 2011, 'Research Methods for Business and Management', Edinburgh Business School-Heriot Watt University, viewed 3 November 2016, <[www.ebsglobal.net/documents/course-tasters/.../h17bm-bk-taster.pdf](http://www.ebsglobal.net/documents/course-tasters/.../h17bm-bk-taster.pdf)>.
43. Johnson, R, B & Onwuegbuzie, A, J 2009, 'Mixed Methods Research: A Research Paradigm Whose Time Has Come', viewed 5 September 2016, <from [www.nova.edu/ssss/QR/QR17-1/terrell.pdf](http://www.nova.edu/ssss/QR/QR17-1/terrell.pdf)>.
44. Johnson, R, B, Onwuegbuzie, A, J & Turner, L, A 2007, 'Toward a Definition of Mixed Methods Research', viewed 4 September 2016, <from [drupal.coe.unt.edu/.../Johnson](http://drupal.coe.unt.edu/.../Johnson)>.
45. Johnston, J 2010, 'Qualitative Research Methods', *Radiologic Technology*, vol 82 (2), viewed 14 November 2016, <[www.radiologictechnology.org/content/82/2/188.full](http://www.radiologictechnology.org/content/82/2/188.full)>.
46. Institute of Hotel Management Catering Technology and Applied Nutrition 2002, 'Research Methodology (For Private Circulation Only)', viewed 23 September 2016, <[www.ihmctan.edu/PDF/notes/Research\\_Methodology.pdf](http://www.ihmctan.edu/PDF/notes/Research_Methodology.pdf)>.
47. Introduction to Quantitative Research, viewed November 2016, <[www.sagepub.com/upm-data/36869\\_muijs.pdf](http://www.sagepub.com/upm-data/36869_muijs.pdf)>.
48. Ivey, J 2012, 'The Value of Qualitative Research Methods', *Padiatric Nursing*, vol 38 (6), viewed 20 November 2016, <[connection.ebscohost.com/c/articles/.../value-qualitative-research-method](http://connection.ebscohost.com/c/articles/.../value-qualitative-research-method)>.
49. Kajornboon, A, B 2005, 'Using Interview as Research Instruments. Language Institute', *Chulalongkorn University*, viewed July 2016, <[www.culi.chula.ac.th/e-Journal/bod/Annabel.pdf](http://www.culi.chula.ac.th/e-Journal/bod/Annabel.pdf)>.
50. Karami, A, Rowley, J & Andoui, F 2006, 'Research and Knowledge Building in Management Studies', viewed 22 April 2016, <[www.bangor.ac.uk](http://www.bangor.ac.uk)>.
51. Krauss, S, E 2005, 'Research Paradigms and Meaning Making: A Primer', *The Qualitative Report*, vol 10 (4), pp 758-770, viewed 22 November 2016, <<http://www.nova.edu/ssss/QR/QR10-4/krauss.pdf>>.
52. Lan, Y, C 2002, *Management of information technology issues in enterprise Globalisation*, thesis, University of Western Sydney, viewed November 2016, Australasian Digital Thesis database.
53. Lee, N & Lings, I, 2008, *Doing Business Research*. Sage, London.
54. Leech, N, L 2012, 'Writing Mixed Research Reports', *American Behavioural Scientist*, viewed 22 November 2016, <<http://abs.sagepub.com/content/56/6/866>>.
55. MacDonald, S & Headlam, N 2008, 'Research Methods Handbook: Introductory Guide to Research Methods for Social Research', Centre for Local Economic Strategies, viewed 20 November 2016, <[www.cles.org.uk/wp-content/uploads/.../Research-Methods-Handbook.p](http://www.cles.org.uk/wp-content/uploads/.../Research-Methods-Handbook.p)>.
56. Mack, N, Woodson, C, MacQueen, K, M, Guest, G, Namey, E 2005, 'Qualitative Research Methods: A Data Collector's Field Guide', Family Health International, viewed 24 July 2016, <[http://www.websm.org/db/12/14617/Bibliography/Qualitative\\_research\\_methods\\_A\\_data\\_collector39s\\_field\\_guide/](http://www.websm.org/db/12/14617/Bibliography/Qualitative_research_methods_A_data_collector39s_field_guide/)>.
57. Mayoux, L 2001, 'Qualitative Methods', viewed 15 November 2016, <[www.sed.manchester.ac.uk/research/iarc/ediais/word.../qualmethods.doc](http://www.sed.manchester.ac.uk/research/iarc/ediais/word.../qualmethods.doc)>.
58. Moriaty, J 2011, 'Qualitative Methods Overview', National Institute for Health Research, viewed 15 November 2016, <[prints.lse.ac.uk/41199/1/SSCR\\_Methods\\_Review\\_1-1.pdf](http://prints.lse.ac.uk/41199/1/SSCR_Methods_Review_1-1.pdf)>.
59. Neville, C 2007, 'Introduction to Research and Research Methods', Bradford University-School of Management, viewed 11 November 2016, <[www.brad.ac.uk/.../Introduction-to-Research-and-Research-Methods.pdf](http://www.brad.ac.uk/.../Introduction-to-Research-and-Research-Methods.pdf)>.
60. New Age Publisher 2013, 'Research Methodology: An Introduction', viewed 20 November 2016, <[www.newagepublishers.com/samplechapter/000896.pdf](http://www.newagepublishers.com/samplechapter/000896.pdf)>.
61. Northern Arizona University 2003, 'Mixed Method Design', viewed 20 November 2016, <[www.niu.edu/~lynch/mixed\\_methods.pdf](http://www.niu.edu/~lynch/mixed_methods.pdf)>.

62. Patel, P 2009, 'Introduction to Quantitative Methods', Harvard Law School, viewed 20 November 2016, < [www.law.harvard.edu/library/research/.../quantitative\\_methods.pdf](http://www.law.harvard.edu/library/research/.../quantitative_methods.pdf)>.
63. Peninsula Research & Development Support Unit 2004, 'Qualitative Research Methods', Help-Sheet 9, viewed 15 September 2016, < <http://www.inclentrust.org/uploadedbyfck/file/compile%20resourse/Qualitative%20Research/Qualitative%20research%20methods.pdf>>.
64. Quinlan, C 2011, *Business Research Methods*. South-Western Cengage Learning, UK.
65. Rajasekar, S, Philominathan, P, & Chinnathambi, V 2013, 'Research Methodology', viewed 22 November 2016, < [arxiv.org/pdf/physics/0601009](http://arxiv.org/pdf/physics/0601009)>.
66. Reisman, J, Gienapp, A & Stachowiak, S 2007, 'A Handbook of Data Collection Tools: Companion to A Guide to Measuring Advocacy and Policy', viewed 11 September 2016, < [www.organizationalresearch.com/.../a\\_handbook\\_of\\_data\\_coll](http://www.organizationalresearch.com/.../a_handbook_of_data_coll)>.
67. Robbins, S. P, 2001, *Organisational Behaviour* 9th edn, Prentice Hall, New Jersey.
68. Robbins, S, P & Judge, T, A, 2007, *Organizational Behaviour*, 12th edn, Prentice Hall, New Jersey.
69. Robbins, S. P, Waters-Marsh, T, Carcioppe, R & Millett, B 2001, *Organisational Behaviour* 3rd edn, Prentice Hall, Sydney.
70. Rosanas, J, M 2007, 'On the Methodology of Management Research', IESE Business School- University of Navarra, viewed 15 November 2016, < [www.iese.edu/research/pdfs/DI-0692-E.pdf](http://www.iese.edu/research/pdfs/DI-0692-E.pdf)>.
71. Sale, J, E, M, Lohfeld, L & Brazil, K 2002, 'Revisiting the Quantitative-Qualitative Debate: Implications for Mixed-Methods Research', *Kluwer Academic Publications*, vol 36, pp 43-53, viewed 16 November 2016, < [www.cnr.uidaho.edu/css506/.../sale%20mixed-methods.pdf](http://www.cnr.uidaho.edu/css506/.../sale%20mixed-methods.pdf)>.
72. Scheuren, F 2004, 'What is a Survey' American Statistical Association, viewed 8 January 2017, < [www.amstat.org/sections/srms/pamphlet.pdf](http://www.amstat.org/sections/srms/pamphlet.pdf)>.
73. Singh, Y, K 2006, *Fundamental of Research Methodology and Statistics*, New Age International Publisher, New Delhi.
74. Small, M, L 2011, 'How to Conduct a Mixed Methods Study: Recent Trends in a Rapidly Growing Literature', Department of Sociology, University of Chicago, viewed 20 November 2016, < [www.annualreviews.org/doi/pdf/10.1146/annurev.soc.012809.102657](http://www.annualreviews.org/doi/pdf/10.1146/annurev.soc.012809.102657)>.
75. Somekh, B & Lewin, C 2006, *Research Methods in the Social Science*, 2nd edn, Sage, London.
76. Spratt, C, Walker, R & Robinson, B 2004, 'Mixed research methods', *Commonwealth of Learning*, viewed 10 July 2016, < [www.col.org/SiteCollectionDocuments/A5.pdf](http://www.col.org/SiteCollectionDocuments/A5.pdf)>.
77. Stephanie, H, J & Sarah, L 2001, 'The Process and Pitfalls of Semi-structured Interviews', viewed 3 September 2016, < Pro-Quest Central >.
78. Targett, D 2012, 'Qualitative Methods', Edinburgh Business School, Heriot Watt University, viewed 15 November 2016, < <https://www.ebsglobal.net/documents/course.../pdf/h17qm-bk-taster.pdf>>.
79. Tashakkori, A & Teddlie, C 2010, *Handbook of mixed methods research in social and behavioural research*, 2nd edn, Sage, Los Angeles.
80. Taylor-Powell, E & Renner M 2003, 'Analysing Qualitative Data', University of Wisconsin-Extension, viewed 15 November 2016, < [learningstore.uwex.edu/pdf/g3658-12.pdf](http://learningstore.uwex.edu/pdf/g3658-12.pdf)>.
81. Teddie, C & Yu, F 2007, 'Mixed Methods Sampling: A Typology With Examples', viewed 8 September 2016, < [sociologyofeurope.unifi.it/.../Teddlie%20](http://sociologyofeurope.unifi.it/.../Teddlie%20)>.
82. Terrell, S, R 2012, 'Mixed-Methods Research Methodologies', viewed 5 September 2016, < [www.nova.edu/ssss/QR/QR17-1/terrell.pdf](http://www.nova.edu/ssss/QR/QR17-1/terrell.pdf)>.
83. Tewksbury, R 2009 Qualitative versus Quantitative Methods: Understanding Why Qualitative Methods are Superior for Criminology and Criminal Justice', *Journal of Theoretical and Philosophical Criminology*, vol 1(1), viewed 15 November 2016, < [jtpcrim.org/January.../Qualitative\\_Vs\\_Quantitative\\_Richard\\_Tewksbury.p](http://jtpcrim.org/January.../Qualitative_Vs_Quantitative_Richard_Tewksbury.p)>.
84. Traynor, V 2007, 'Qualitative Methods: An introduction to key concepts', *University of New South Wales*, viewed 12 July 2016, < [pdf-world.net/.../Qualitative-Methods-An-introduction-to-key-concepts](http://pdf-world.net/.../Qualitative-Methods-An-introduction-to-key-concepts)>.
85. University of Mumbai 2011, 'Social Research-Introduction', viewed 15 November 2016, < [www.mu.ac.in/myweb\\_test/.../Research%20Methodology%20-%20IX.pdf](http://www.mu.ac.in/myweb_test/.../Research%20Methodology%20-%20IX.pdf)>.

86. Woods, M 2011, 'Interviewing for research and analysing qualitative data: An overview', School of Health & Social Services Massey University, viewed 11 November 2016, < [owll.massey.ac.nz/.../interviewing-for-research-and-analysing-qualitative](http://owll.massey.ac.nz/.../interviewing-for-research-and-analysing-qualitative)>.
87. Yang, Z, Wang, X & Su, C 2006, 'A review of research methodologies in international business', *International Business Review*, vol 15, pp 601-617, viewed 15 November 2016, < [www.sciencedirect.com/science/article/pii/S0969593106000850](http://www.sciencedirect.com/science/article/pii/S0969593106000850)>.
88. Zikmund, W, G 2003, *Business Research Methods*, 7th edn, Thomson, United States.

