

# 'Triangulation' Research Method as the Tool of Social Science Research

Sabina Yeasmin \*

Khan Ferdousour Rahman \*\*

## Abstract

*This article discusses 'triangulation' as a strategy for increasing the validity of evaluation and research findings. Triangulation is used to combine the advantages of both the qualitative and the quantitative approach. Each method offers specific advantages as well as disadvantages. Recent developments in the philosophy of science have argued that the two traditions should not have a separate-but-equal status, and should instead interact. Triangulation is not aimed merely at validation but at deepening and widening one's understanding, and tends to support interdisciplinary research rather than a strongly bounded discipline of sociology or anthropology.*

**Keywords:** Triangulation, Validity, Methodology, Quantitative, Qualitative.

## Introduction:

"By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single-method, single-observer, single-theory studies. Often the purpose of triangulation in specific contexts is to obtain confirmation of findings through convergence of different perspectives. The point at which the perspectives converge is seen to represent reality." -- Jakob, Alexander (2001)

In recent years, the use of qualitative and quantitative methods in studying the same phenomenon has received significant attention among the scholars and researchers. As a result, it has become an accepted practice to use some form of 'triangulation' in social research. In the social sciences, the use of 'triangulation' can be traced back to Campbell and Fiskel (1959). This was later developed by Web (1966) and elaborated by Denzin (1970) beyond its conventional association with research methods and designs.

Research is a systematic investigation to find answers to a problem, which is

---

\* Assistant Professor, Bangladesh Open University; Email: sabina\_d@hotmail.com

\*\* Research Fellow, Bangladesh University of Professionals, and Adjunct Faculty, Dhaka International University; Email: ferdous3820@yahoo.co.uk

carried out mainly on social context, with of course few exceptions. Exact prediction of social science is difficult as it is not science. The objective of science is to discover, describe and explain the fact, whereas in case of social science it is to observe, verify and conclude. Social scientists operate through observation and experience; as well as through ideas, theories and models. In science, the scientist can achieve the goal through gathering knowledge scientifically by following the basic principles of research methodology. But in social science that is not very easy as it is an enquiry to unearth social phenomena involving human behavior. Because various elements influence and change the social phenomena and most of the time, those cannot be measured microscopically.

In the natural sciences, the research findings of Scientist A are held to have been validated when Scientist B in a different laboratory is able to repeat Scientist A's original experiment with identical findings. But this validation by replication is not possible in the social sciences because, with the exception of psychological laboratory studies, social science research takes place in natural, everyday settings, which will always contain particular and unique features that cannot be exactly reproduced in a second setting, or even in the same setting at a different point in time.

According to Young (1968), social research is a scientific understanding which by means of logical methods, aim to discover new facts or old facts and to analyze their sequences, interrelationships, causal explanations and natural laws which govern them. Since much social research is founded on the use of a single research method and as such may suffer from limitations associated with that method or from the specific application of it, multiple methods offers the prospect of enhanced confidence. There is also a distinct tradition in the literature on social science research methods that advocates the use of multiple methods. It has been argued that the deficiencies of any one method can be overcome by combining methods and thus capitalizing on their individual strengths. One of such method is known as 'triangulation'. In social science research, this basically refers to a process by which a researcher wants to verify a finding by showing that independent measures of it agree with or, at least, do not contradict it. Consequentially, some social scientists have suggested that validation in the social sciences might be achieved by the collection of corroborating findings from the same respondents and on the same topic, but using different methods.

Social realities are inherently complex to be grasped in its entirety with one method of investigation. It is so complex that it is impossible to be captured by a single way of data collection or technique. All the existing tools of social

research method have advantages and disadvantages. In other words, each method contains strength and weakness. No single one can prove all the required ideals. Therefore, it is useful to triangulate in order to compensate the weaknesses of other methods so as to have a holistic view of social realities.

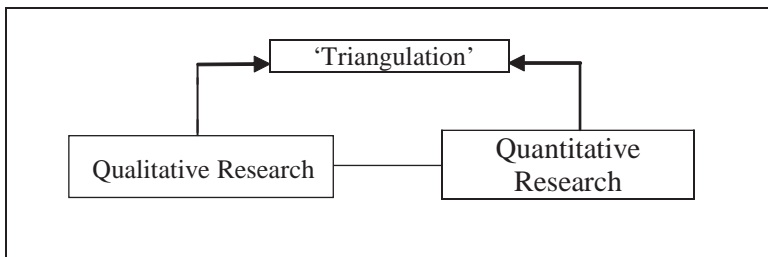
### **Objective of the Study:**

The broader objective of this study is to examine the 'triangulation' research method as the tool of social science research. However, the specific objectives are set to find out the followings:

- 1 The key tools of achievement of 'triangulation';
- 1 The usefulness of 'triangulation'; and
- 1 The challenges of 'triangulation'.

### **What is 'Triangulation'?**

'Triangulation' is a process of verification that increases validity by incorporating several viewpoints and methods. In the social sciences, it refers to the combination of two or more theories, data sources, methods or investigators in one study of a single phenomenon to converge on a single construct, and can be employed in both quantitative (validation) and qualitative (inquiry) studies. Discussions about whether and how to combine social research methods go back to debates about the use of survey and fieldwork or the use of interviews and participant observation. Most recently, the debates about the relationship between quantitative and qualitative methods as viewed by Blaikie (1991), particularly in evaluation research, have advocated a combination of methods.



**Figure 1: Basic 'Triangulation' Research Model**

It has become an accepted practice to use some form of 'triangulation' or the combination of different methods in the study of same phenomenon in social research. The origins of 'triangulation' in social work and in the wider social sciences are only metaphorically related to the process in the discipline within the field of geography concerned with land surveying based on the laws of

trigonometry, where the surveyor gets a fix on the position by carrying out three measurements to determine the exact position of a point in the landscape. This states that if one side and two angles of a triangle are known, the other two sides and angle of that triangle can be calculated. According to Smith (1975), the 'triangulation' metaphor is from navigation and military strategy that use multiple reference points to locate an object's exact position. Given basic principles of geometry, the multiple viewpoints allow for greater accuracy. In a similar fashion a social scientist may better be able to measure a concept to look at it from two or more different perspectives.

'Triangulation' can also be achieved by using different research techniques. Triangulated techniques are helpful for cross-checking and used to provide confirmation and completeness, which brings 'balance' between two or more different types of research. The purpose is to increase the credibility and validity of the results. Often this purpose in specific contexts is to obtain confirmation of findings through convergence of different perspectives.

In fact, there are many different approaches to 'triangulation' and there are articulate proponents for each approach. Denzin (1970) distinguished four forms of 'triangulation': data 'triangulation' (retrieve data from a number of different sources to form one body of data), investigator 'triangulation' (using multiple observers instead of a single observer in the form of gathering and interpreting data), theoretical 'triangulation' (using more than theoretical positions in interpreting data) and methodological 'triangulation' (using more than one research method or data collection technique). Of the four methods, methodological 'triangulation' represents the most common meaning of the term. The type of 'triangulation' chosen depends on the purpose of a study, and more than one type of 'triangulation' can be used in the same study. Each of the method obviously has its own strengths and weaknesses.

Few questions may be useful for anyone planning to conduct a 'triangulation' research. Will it be cost-effective? Does the client approve to do effective 'triangulation'? Are the financial and human resources available to do 'triangulation'? Will 'triangulation' require the collection of new data? Will the key stakeholders provide relevant data for 'triangulation'?

### **'Triangulation' as an Effective Tool of Research Methodology**

By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer, single-theory studies. There are basically three types of biasness: firstly, the measurement bias is caused by the way in which data are collected; secondly, sampling bias causes as all the population under study are not covered; and thirdly,

procedural bias occurs when participants are put under some kind of pressure to provide information.

In this paper, we make use of the two main reasons of 'triangulation' as identified by (Shih, 1998); that is using 'triangulation' for confirmatory and for completeness purposes. There are more benefits of using 'triangulation' for confirmatory purposes. The classical benefit depicted by various methodologists is the validation of qualitative results by quantitative studies. Not only that but also researchers use 'triangulation' for validating quantitative research instruments when the research phenomenon under investigation has little theoretical underpinnings. In quantitative approach, 'triangulation' for confirmatory purpose is normally applied to confirm if instruments were appropriate for measuring a concept. In addition to that, as a confirmatory approach, 'triangulation' can overcome challenges related to a single-method, single-observer and single-theory biasness and thus can be applied to confirm the research results and conclusions.

For completeness purposes, researchers use 'triangulation' to increase their in-depth and understanding of the phenomenon under investigation by combining multiple methods and theories. The use of 'triangulation' for completeness purposes gradually emerged in the literature and it is important in conducting researches since it allows for recognition of multiple realities. 'Triangulation' for completeness purposes is used mainly in researching the less explored or unexplored research problems. One of the advantages of qualitative research paradigm is generating the rich amount of data that further can help researchers in developing hypotheses for quantitative investigations. For any scientific work, developing hypotheses requires a problem with rigorous theories; however this is not the actual fact in this world. There are some problems that are less researched and un-explored, hence to come up with credibly testable hypothesis for these problems researchers need to make use of qualitative and quantitative methods. There is a clear point of departure between the use of 'triangulation' for confirmation and completeness purposes. For confirmation purposes a researcher can use only the within-method type of 'triangulation'. On the other side, both the within and between-method triangulations are important when the main reason of employing 'triangulation' is for completeness purposes.

### **The Key Tools of Achievement of 'Triangulation'**

'Triangulation' can only be done when data are available, whether they are data from different sources, different investigators, different theories or different methods. However, when data are available, there are a number of different reasons why 'triangulation' can and should be used. For example, in case of handling complex questions, dissimilar data, poor quality data, insufficient

data, trend data, rapid response etc. It is important to note that the greater is the 'triangulation', the greater is the confidence in the observed findings.

### **Using 'Triangulation' Method: An Overview**

There have been mixed views on the use of 'triangulation' in research. Olsen (2004) views some authors' argument for 'triangulation' is just for increasing the wider and deep understanding of the study phenomenon. While Web (1966), Campbell (1966), Smith & Kleine (1986) and Denzin (1978) have argued that 'triangulation' is actually used to increase the study accuracy in this case 'triangulation' is one of the validity measures.

Again using 'triangulation' especially both qualitative and quantitative methods in the same study has resulted into debate from some researchers as Hunt (1991) views arguing that the two paradigms differ epistemologically and ontologically. In the social sciences, particularly in Anthropology, Sociology, Psychology, Development Studies, Gender Studies, Political Science, International Relations, Peace and Conflict Studies, Mass Communication and Journalism, Media Studies, Film Studies etc., the use of one or other type of method has become a matter of controversy and even ideology, with particular schools of thought within each discipline favouring one type of method and pouring scorn on to the other.

### **Usefulness of 'Triangulation'**

'Triangulation' provides researchers with several important opportunities. First it allows researchers to be more confident of their results. This can play many other constructive roles as well. It can stimulate the creation of inventive methods, new ways of capturing a problem to balance with conventional data-collection methods. This may help to uncover the deviant dimension of a phenomenon. This may also serve as the critical test, by virtue of its comprehensiveness, for competing theories. 'Triangulation' minimizes the inadequacies of single-source research. Two sources complement and verify one another, which reduces the impact of bias. This provides richer and more comprehensive information because humans share more candidly with an independent third party than they do with someone they know or think they know. Using several methods together also helps to rule out rival explanations.

### **Challenges of 'Triangulation': An Assessment**

The 'triangulation' strategy is not without some drawbacks. First of all, if the research is not clearly focused theoretically or conceptually, it will not produce a satisfactory outcome. Again it should not be used to legitimate a dominant, personally preferred method. That is, if either quantitative or qualitative methods become mere window dressing for the other, then the design is

inadequate. Each method should be represented in a significant way. This does, however, raise the question of whether the various instruments may be viewed as equally sensitive to the phenomenon being studied. One method may, in fact, be stronger or more appropriate but this needs to be carefully justified and made explicit. Otherwise, the purpose of 'triangulation' is subverted. Again 'triangulation' is a strategy that may not be suitable for all research purposes. Various constraints e.g. time, costs may prevent its effective use. Nevertheless, 'triangulation' has vital strengths and encourages productive research. It heightens qualitative methods to their deserved prominence and, at the same time, demonstrates that quantitative methods can and should be utilized in complementary fashion. Above all, it demands creativity from its user - ingenuity in collecting data and insightful interpretation of data. Therefore, 'triangulation' is not an end in itself and not simply a fine-tuning of the research instruments. Rather, it can stimulate to better define and analyze problems in social context.

There are three outcomes that might result from a 'triangulation' strategy. The first is that which is commonly assumed to be the goal of it and that is convergence. When data from different sources or collected from different methods then the outcome is convergence. A second and probably more frequently occurring outcome from a 'triangulation' strategy is inconsistency among the data. The data obtained through 'triangulation' may be inconsistent, not confirming but not contradictory. A third outcome is contradiction. At times, data are not simply inconsistent but are actually contradictory, leading the researcher to incommensurable propositions.

Addressing on the challenges of how to combine the two paradigms in the same study, Morse (1991) suggests possible two ways in which quantitative and qualitative methods can be triangulated. First, qualitative method used as preliminary inquiries in a quantitative study; whereby, qualitative methods are regarded as supplementary methods. Secondly, quantitative methods precede as preliminary inquiry in a qualitative study in the sense that quantitative methods are regarded as auxiliary methods. Principally, wherever qualitative and quantitative methods are used in the same research project, it is assumed in advance as Denzin and Lincoln (1994) view that the researcher has clear prior understanding of the main ontological and epistemological position of the phenomenon under investigation.

These various notions share the conception that qualitative and quantitative methods should be viewed as complementary rather than as substitutable. Qualitative methods might be used to understand the meaning of the numbers produced by quantitative methods. Using quantitative methods, it is possible to give precise and testable expression to qualitative ideas. Taking into



considerations that both methods in qualitative and quantitative paradigms also have strengths and weaknesses, it is recommended focusing on the within-method and between-method type of 'triangulation'. Thus, to reap the benefits of two paradigms and minimizing the drawbacks of each, the combination of the two approaches have been advocated.

## **Conclusion**

'Triangulation' is possible and a good way to reap the benefits of both qualitative and quantitative methods. This can cut across the qualitative-quantitative divide. The use of 'triangulation', however, will depend on the researcher's philosophical position. It is not aimed merely at validation but at deepening and widening one's understanding. It tends to support interdisciplinary research rather than restricted within social sciences. In fine, 'triangulation' can, indeed, increase credibility of scientific knowledge by improving both internal consistency and generalizability through combining both quantitative and qualitative methods in the same study. However, effective 'triangulation' depends on coordination and collaboration; particularly those who are actively involved in collecting data and response.

## **References**

- Ahmed, Jashim U. 2007 (July), *An Overview of Triangulation Research*, North South Business Review, Volume 2, Number 1.
- Ali, Haider and Birley, Sue 1998, *Integrating Deductive and Inductive Approaches in a Study of New Ventures and Customer Perceived Risk*, London.
- Blaikie, Norman 1991, *A Critique of the Use of Triangulation in Social Research*, Quality and Quantity, Volume 25, Number 2, 115-136.
- Blaikie, Norman 2000, *Designing Social Research*, Oxford: Blackwell.
- Bloor, Michael and Wood, Fiona 2001, *Keywords in Qualitative Methods*, Sage Publications.
- Brannen, J. 1992, *Combining Qualitative and Quantitative Approaches: An Overview*, Aldershot: Avebury.
- Bryman, A. 2004 (second edition), *Social Research Methods*, Oxford: Oxford University Press.
- Campbell, D. and Fiskel, D. 1959, *Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix*, Psychological Bulletin, 56: 81-105.



- Caracelli, V. (ed) 1997, *Advances in Mixed-Method Evaluation: The Challenges and Benefits of Integrating Diverse Paradigms*, San Francisco: Jossey-Bass, 19-32.
- Chowdhury, Anwarullah (ed) 1985, *Pains and Pleasures of Fieldwork in Research*, Dhaka: National Institute of Local Government.
- Creswell, J. 2003, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Sage Publications.
- Denzin, N. 1970, *The Research Act in Sociology*, Chicago: Aldine.
- Denzin, N. 1978, *The Research Act: A Theoretical Introduction to Sociological Methods*, New York: McGraw-Hill.
- Denzin, N. 1989, *The Research Act: A Theoretical Introduction to Sociological Research Methods* (3rd edition, first published on 1970), Prentice Hall.
- Denzin, N. and Lincoln, Y. (ed) 1994, *Handbook of Qualitative Research*, Sage Publications.
- Hischheim, A. 1985, *Information Systems in Epistemology: An Historical Perspective*, in Munford. E. et al (ed), *Research methods in Information Systems*, 13-38.
- Hussein, Ashatu 2009, *The Use of Triangulation in Social Sciences Research: Can Qualitative and Quantitative Methods be Combined?* Journal of Comparative Social Work, Number 1.
- Jakob, Alexander 2001 (February), *On the Triangulation of Quantitative and Qualitative Data in Typological Social Research: Reflections on a Typology of Conceptualizing 'Uncertainty' in the Context of Employment Biographies*, Forum: Qualitative Social Research, Volume 2, Number 1.
- Jick, Todd 1979, *Mixing Qualitative and Quantitative Methods: Triangulation in Action*, Administrative Science Quarterly, Volume 24, Number 24, 602-611.
- Kumar, Arvind 2002, *Research Methodology in Social Sciences*, New Delhi: Sarup & Sons Publishers.
- Mathison, S. 1988, *Why Triangulate?* Educational Researcher 17(2): 13-17.
- Maxwell, J. and Loomis, D. (ed) 2003, *Mixed Methods Design: An Alternative Approach*, Sage Publications.
- Meijer, Paulien et al 2002, *Multi-Method Triangulation in a Qualitative Study on Teachers' Practical Knowledge: An Attempt to Increase Internal Validity*, Quality & Quantity 36: 145-167.

- Olsen, Wendy 2004, *Triangulation in Social Research: Qualitative and Quantitative Method Can Really be Mixed*, in Holborn M. (ed), *Developments in Sociology*, Ormskirk: Causeway Press.
- Rahman, ASM Atiqur 2006, *Samaj Gobeshona Poddhoti*, Dhaka: New Age Publications.
- Shih, F. 1998, *Triangulation in Nursing Research: Issues of Conceptual Clarity and Purpose*, *Journal of Advanced Nursing*, 28(3), 631-641.
- Smith, M. and Kleine, P. 1986, *Qualitative Research and Evaluation: Triangulation and Multimethods Reconsidered*, in Williams D. (ed), *Naturalistic Evaluation (New Directions for Program Evaluation)*, San Francisco: Jossey-Bass.
- Spicer, N. (ed) 2004 (second edition), *Combining Qualitative and Quantitative Methods*, Sage Publications.
- Tashakkori, A. and Teddlie, C. 1998, *Mixed Methodology: Combining Qualitative and Quantitative Approaches*, Sage Publications.
- Webb, E. et al 1966, *Unobtrusive Measures: Non-reactive Research in the Social Sciences*, Chicago: Rand McNally.
- Young, P. 1968, *Scientific Social Surveys and Research*, New Delhi: Prentice Hall.