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THE QUAL-QUANT DISTINCTION (DEBATE): UNDERSTANDING THE PHENOMENA

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ABSTRACT

Because the qualitative and quantitative data can be analyzed by both qualitative and quantitative methods, some scholars argue that the combination of them can be more effective but others argues that the distinction between qualitative and quantitative data have certain utility, though most people draw to hard a distinction. Although, the quantitative-qualitative distinction can lead to some sorts of confusions due to their distinct ontological and measurement related issues; the qual-quant distinction debate is philosophical, not methodological. Hence this paper discusses about the philosophical and practical issues on qual-quant distinction and the interpretation of qualitative and quantitative data in the form of each other.

Keywords: Qualitative data, Quantitative data, Data analysis, Qual-quant distinction.

Contribution/ Originality

This paper contributes the first logical idea of same data can treat both hermeneutically and statistically. Additionally, this paper would be fruitful to understand the sharpness and usefulness of the distinction of qualitative and quantitative data or its integration.

1. INTRODUCTION

There are varieties of research methodologies, however, no single accepted research methodology applicable to all research problems because each research methodology has its own relative weakness and strength (Tuli, 2010). Tuli (2010) further noted that quantitative methodology is concerned with attempts to quantify social phenomena, collect and analyze numerical data, and focus on the links among a smaller number of attributes across many cases. On the other hand qualitative methodology is more concerned with understanding the meaning of social phenomena and focus on links among a larger number of attributes across relatively few cases. So the qualitative design is fluid rather than linear as the researcher endeavor to explore, examine, or discover new understandings through the inductive ways (Kaczynski *et al.*, 2014).

Because of the distinct nature of methodological standpoints, same strategy of data collection can gather separate nature of data, so it may be created confusion to compare and/or mix each other. For instance, quantitative investigators assume that observations are highly comparable because quantitative tools require a single, uniform metric and a precise point of estimation for each observation. Contrastingly, qualitative scholars need not assume a high level of comparability among observations because qualitative tools are linguistic and words are open to a variety of meanings (Gerring and Thomas, 2011). So this paper discusses about the general understanding about the distinction of qualitative and quantitative data, and the practical process of combining them or interpreting qualitative data in to quantitative and vice versa along with sharpness and weakness of combining and distinguishing them.

2. ANALYZING QUALITATIVE AND QUANTITATIVE DATA

Data analysis in qualitative research includes the range of processes and procedures whereby we move from the collected data in the forms of explanation, understanding or interpretation of the people and situations. In this sense, qualitative data analysis is usually based on the interpretative philosophy (Tayler and Gibbs, 2010), and we try to examine the meaningful and symbolic interpretation of qualitative data, whereas the quantitative researchers form research questions and hypothesis and tries to explore causal relationships and try to prove and/or disprove a top-down theoretical model (Kaczynski *et al.*, 2014).

Although the quantitative and qualitative research approaches have their own strengths and weaknesses, the combination of them can be more effective. For instance, we can use qualitative research to identify the factors that affect the areas under investigation, and then use that information to devise quantitative research that assesses how these factors would affect user preferences (Madrigal and McClain, 2012). In this essence, in one single research same data can treat both hermeneutically and statistically (Srnlka and Koeszegi, 2007). Starting from one type of data (qualitative or quantitative), qualitative and quantitative analyses can combine within one single research process (ibid). Additionally, Bernard (1996) noted that qualitative data and quantitative data can be analyzed by both qualitative and quantitative methods. On the basis of the above ideologies, the following matrix can present to relate qualitative and quantitative combinations.

Analysis	Data	
	Qualitative	Quantitative
Qualitative	A	B
Quantitative	C	D

From the matrix, it is clear that we can employ four types of data analysis procedures based on each cell; cell A (qualitative analysis of qualitative data), cell B (qualitative analysis of

quantitative data), cell C (quantitative analysis of qualitative data), and cell D (quantitative analysis of quantitative data).

Cell A refers to the qualitative analysis of qualitative data. In general, the interpretive analyses of the textural documents are of this kind because when we do a qualitative analysis, we first interpret the collected information. In analyzing the qualitative data, researcher talks about how the themes are related to one another. Additionally, the researcher may deconstruct the text; look for hidden subtexts, and try to let the audience know the deeper and multiple meanings of the text. Hence qualitative analysis involves reducing people to words (Bernard, 1996). Krauss (2005) further noted that the construction of meaning is the task of qualitative research and reflects the specific methods used in the qualitative data analysis process. So the qualitative data analysis process is a highly intuitive activity (Krauss, 2005). However, there are no universally accepted models for such analysis (Giorgi, 1985). Several strategies are employed by the qualitative researchers but the bottom line is that the data analysis process should be credible (Giorgi, 1985). The following steps would be helpful to understand qualitative data analysis process.

- a. Read completely through each protocol to get the sense of the whole.
- b. Read again and divide transcript into units that seem to express a self-contained meaning from a psychological perspective.
- c. Express in an explicit way the implicit psychological aspect of the meaning unit and then write sentence in own words that expresses this discovery.
- d. Interrogate each meaning unit and its theme in terms of the specific topic of the study.
- e. Synthesize and tie together the meaning units into a description of essential psychological meanings.

Cell B refers to the qualitative analysis of quantitative data. It means that the numeric data can interpret with the relevant descriptive meaning. Trochim (2006) noted that all quantitative data is based upon the qualitative judgments but Bernard (1996) assume that the idea of a qualitative analysis of qualitative data is not so clear-cut, it's tempting to think that qualitative analysis of text keeps researcher somehow close to the data. So if we have quantitative data, the numbers themselves cannot be interpreted without the descriptive meaning of them and understanding of the assumptions which underlie them.

For instance, Kathmandu University, School of Education (KUSOED), Nepal has conducted the tracer study on its graduates and the question was included in the survey form that: "*KUSOED has good learning environment*" and the rating scale was 1 to 5 as below;

- a. Strongly disagree
- b. ***Disagree***
- c. Neutral

- d. Agree
- e. Strongly agree

Assume that majority of the graduates answered 2 (Disagree). Now the question is what does this mean? How do we interpret the value of "2"? Now we can't really understand this quantitative value unless we dig into some of the meanings and assumptions that underlie it, which may include;

- a. Did the graduates' understand the term "good learning environment"?
- b. Did the graduates' understand that "2" means that they are disagreeing with the statement?
- c. Did the graduates' read carefully enough to determine that the statement was limited only to good 'learning environment'?
- d. Were the graduates' careful or they just circle anything randomly?
- e. Was the survey anonymous? Was it confidential? etc.....

Hence, there could be many more arguments regarding the specific numeric value. So all numerical information involves numerous judgments about what the number means. Hence, to do good research and /or to be a good researcher we need to use both the qualitative and the quantitative ideologies.

Cell C refers to the Quantitative analysis of qualitative data, ie we can tune descriptive data in to numbers. The general practice to tune the qualitative data/information in to quantitative is to represent the data in to matrix, where rows are units of analysis and the columns are the variables and the cells are values for each unit of analysis on each variable (as shown in above matrix). Trochim (2006) argue that all qualitative information can be easily converted into quantitative. For instance, divide the qualitative information into units and number them, the simple nominal identification of data enables to organize and process for analysis more efficiently (Trochim, 2006). Bernard (1996) assumes that when we code the qualitative data, the statistical treatment is a matter of data processing for further analysis process. Hence, we can assign any types of qualitative information with meaningful numerical values. Then these values help us to achieve the meaning of the data in an effective manner.

Let's illustrate one practical example. In a KUSOED tracer study, we give one open ended question that asks the graduates to provide their personal inputs and suggestions for the betterment of the KUSOED program. Then the graduates' responses were text-based and absolutely qualitative. Then we sort the responses into simple categories and give each category a short label that represents the theme in the response. Let's say that five themes were developed based on the open-ended response of the graduates. Assume that we have ten graduates (eg. from PhD group), now we can develop the table to represent the responses of the ten graduates into the five themes as below:

R	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Total
1	Y	Y	N	Y	N	3
2	Y	N	Y	N	N	2
3	Y	Y	N	Y	N	3
4	N	Y	N	Y	N	2
5	N	Y	N	Y	N	3
6	Y	Y	N	N	Y	3
7	N	N	Y	Y	Y	3
8	N	Y	N	Y	N	2
9	N	N	Y	N	Y	2
10	N	N	N	Y	Y	2
Total	4	6	3	7	5	

Note: Y= Yes, N = No

This table represents the thematic coding of the qualitative information provided by the KUSOED graduates. So we calculate the same information quantitatively in the last row and column of the above table. This clears that the qualitative coding now reflects the quantitative information. Now we can calculate the statistical meaning of the themes. We can see in this table that theme 4 is most frequently mentioned. Now we can calculate the frequency, correlations between the themes and much more based on this table.

On the other hand quantitative analysis approaches are particularly helpful when the qualitative information has been collected in some structured way, even if the actual information has been elicited through participatory discussions and approaches (Abeyasekera, n.d). Sandelowski and Knafl (2009) point out about quantitating the qualitative data, stating that this is done in qualitative research to facilitate pattern recognition or otherwise to extract meaning from qualitative data, account for all data, document analytic moves, and to verify interpretations (Sandelowski and Knafl, 2009).

Cell D refers to the quantitative analysis of quantitative data. This cell denotes the statistical analysis of questionnaire data, as well as it refers to more mathematical kinds of analysis. Bernard (1996) argues that quantitative analysis involves reducing people to number. Quantitative data can be analyzed in a variety of different ways. However, data tabulation (frequency and percent distribution), describing the data set, disaggregating the data across different variables and sub categories of variables (sometimes called crosstabs) and use of the data set for advance analytical methods are frequently used practices by the scholars.

Some other approaches to investigate the special cases beside the above is historiometric approach. Which can be used to investigate the rare events which entails the quantitative analysis of multiple qualitative cases cumulated over time (Mumford *et al.*, 2008). However, the above four matrix process suggests doing good research; we need to use both qualitative and quantitative ideologies for the meaningful discovery.

3. THE QUAL-QUANT DISTINCTION (DEBATE)

Although qualitative data can interpret in the form of quantitative and quantitative data can interpret in the form of qualitative, one of the conventional lines of organizing different research approaches has been the distinction between quantitative and qualitative research methods (Gold, 2007). The distinction between qualitative and quantitative data have some utility, though most people draw too hard a distinction, and that can lead to some sorts of confusion because the quantitative types argue that their data is hard, rigorous, credible and scientific, whereas the qualitative says their data is sensitive, nuanced, detailed and contextual (Trochim, 2006). Howe (1988) argues that the quantitative-qualitative distinction is confuses between two senses: a measurement sense (categorical, ordinal, interval & scale) and an ontological sense that data are qualitative if they are intentionalist (i.e., incorporate values, beliefs, and intentions). Data are quantitative if they are non-intentionalist (i.e., display values, beliefs, and intentions (Howe, 1988).

Allwood (2012) mentioned that the distinction between qualitative and quantitative approaches can be made in three different ways; (1) to focus on one part of the research process that is then called qualitative or quantitative, (2) to describe specific research methods as either qualitative or quantitative, and (3) to distinguish between a qualitative and a quantitative research philosophy. On the other hand, Collier *et al.* (2003) argues that there are simply four pertinent ways about the qualitative-quantitative distinction; the level of measurement, size of the N, use of statistical tests, and thick versus thin analysis. (Collier *et al.*, 2003).

Despite several arguments between quantitative and qualitative distinctions, the heart of the quantitative-qualitative debate is philosophical, not methodological (Krauss, 2005). Maxwell (2010) argues that although most of the debate between qualitative and quantitative researchers during the paradigm wars centered on differences in methods and paradigms rather than data. For instance, the methodological differences, such as observations versus measurement imply a distinction between numerical and non-numerical data; this distinction is also conveyed by the terms hard and rich data and is implicit in the charge of “imprecision” that has been leveled against qualitative methods (Using numbers in qualitative research, p. 476). On the other hand, Hammersley (1992) claimed that the use of qualitative or quantitative data is not a valid basis for distinguishing qualitative from quantitative research, stating that “the contrast between words and numbers does not get us very far” (p. 162, as cited in Maxwell (2010). However the concluding remark is the presence of substantial overlap between many features of qualitative and quantitative research often makes it difficult to separate qualitative and quantitative research.

4. THE SHARPNESS AND USEFULNESS OF QUAL-QUANT DISTINCTION

There are different signs that the distinction between qualitative and quantitative research is problematic and of limited value (Allwood, 2012). The distinction between qualitative and quantitative research is abstract, very general and its value is usually taken for granted (Allwood,

2012). Use of the distinction may restrict creativity in the development of new research methods and create confusion and unnecessary work (ibid.). As Vogt (2008) noted that much thinking about the nature of research problems today uses the qual-quant distinction as a master category. This can do more harm than good (Vogt, 2008). Vogt (2008) further noted that such distinction influence to narrow our vision concerning the range of methodological choices in following ways.

- a. To think in terms of quantitative and qualitative design a category mistake and it diverts attention from other kinds of multi-method research.
- b. It leads to stereotyping and tribalism among researchers and encourages accepting weaknesses. It may distract researchers from other ways of thinking and handling the data, particularly graphic ones.
- c. It is based on confusion about the nature of thinking and ignores the relation between indicators and concepts. So this can divert attention from the nature of the phenomena being studied.
- d. Mixed method, by treating the qualitative-quantitative distinction as though it were the most important one, may have the paradoxical effect of reinforcing categories better abandoned or de-emphasized (Vogt, 2008).

On the other hand, some scholars argue that the distinction also contributes to making the discourse on research methodology more trivial since the research methods used are sometimes described simply as qualitative methods or quantitative methods (Allwood, 2012). In current days, mix methods research is quite popular because it is legitimate to mix qualitative and quantitative approaches, thus assuming that it is meaningful to distinguish qualitative and quantitative approaches (Allwood, 2012). If someone discarded the distinction between qualitative and quantitative research one would not have to apologize for mixing methods classified into the two approaches. It seems clear that it is possible to use and combine different types of research methods without subscribing either to the distinction between qualitative and quantitative research (Allwood, 2012).

Hence, although the quantitative-qualitative distinction is applied at various levels; data, design and analysis, interpretation of results, and epistemological paradigms (Howe, 1988), the rigorous data gathering and analysis procedure needs to contribute to the validity and reliability of research that merges qualitative and quantitative methods. But a formal framework, which enhances reliability and contributes to the credibility as well as acceptance of qualitative research, is still missing (Srnlka and Koeszegi, 2007). A clearly defined procedure which can provide a structure for reporting the steps and methods applied in a combined research project, would allow perspective researchers to better understand, evaluate, and replicate such studies.

5. CONCLUSIONS

The qualitative and quantitative research approaches have their own procedures and process of collecting data and interpreting them. The qualitative data usually based on the interpretative philosophy where the quantitative dialogue concerned to prove or disprove a top-down theoretical model. However, several scholars argue that the combination of qualitative and quantitative data can be more effective. It is also a common understanding of research scholars that, in a research same data can treat both hermeneutically and statistically. So qualitative data and quantitative data can be analyzed by both qualitative and quantitative methods.

On the other hand, scholars, like, [Howe \(1988\)](#), [Trochim \(2006\)](#) argues that the quantitative-qualitative distinction can lead to some sorts of confusions in ontological and measurement sense because quantitative researchers argue that their data is hard, rigorous, credible and scientific, whereas the qualitative says their data is sensitive, nuanced, detailed and contextual. Hence the heart of the quantitative-qualitative distinction debate is a philosophical one than methodological. So, further discourse and discussion is essential for the comprehensive understanding about the distinction of qualitative and quantitative data or its integration.

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