The basic building blocks of quantitative research psychology essay

Qualitative Research Methodology is gaining wide spread acceptance among Researchers in Social Sciences Circle but finds less acceptance among Basic Scientists and Engineers who prefer to use Quantitative (Statistical) Methods of Research.

Statistics can be defined as collecting, summarizing, and analyzing of data. Selection of a statistical analysis that is appropriate depends on whether the data for the variable under study are qualitative or quantitative. Quantitative data consists of numerical information and a methodology when applying statistical/mathematical tools for analysis of such type of data is known as Quantitative Research Methodology. In contrast, Qualitative data consists of non-numerical information (such as text, images, and sounds) and a methodology of analysis of such kind of data when not relying on statistical/ mathematical tools is known as Qualitative Research Methodology [1]. The main difference that describes whether qualitative research is superior or quantitative research is how they are able to contribute to bodies of knowledge. Qualitative research mainly focuses on the behaviors, cultures and defining characteristics of events, human nature, interactions and experience. Data is not transformed to numerical data. Qualitative research methods emphasis on interpretation and by providing the analysts with complete views, environmental immersions and a depth of understanding of concepts. Qualitative methods of research provide a depth of understanding of issues/problems which is not possible through the use of quantitative methods (statistically-based investigations). The knowledge gained through qualitative research methods is more informative, richer and offers enhanced understandings in comparison to that obtained through quantitative research

methods. Quantitative research is typically considered to be the more “ scientific” approach that is concerned with number, or numerical descriptions of things and their relationships [2].

The basic building blocks of quantitative research are variables. Important types of variables used in quantitative research are: categorical variable, quantitative variable, dependent variable and independent variable. Three major types of quantitative research are: experimental, non-experimental research and survey. The purpose of experimental research is to study relationship of cause and effect. It is only type of research where active manipulation of an independent variable is present. Random assignment to create “ equivalent” groups is used in the strongest experimental research designs [3]. Experimental research includes testing a hypothesis in a controlled environment while non-experimental research involves examining the already existing scenario in the world and trying to draw conclusions from the situation by using usually a cause-effect relationship. Social sciences, particularly history, archaeology, and political science, focus the non-experimental research methods. Owing to the complexity of the situation there is no way to form a meaningful experiment for the majority of these fields. Though psychology and anthropology are much more inclined to experimental research for determining patterns [4]. Testing of the hypothesis is done by either of the three tests: z-test, t-test and p-value test [5]. Quantitative analysis also includes descriptive and inferential statistics. Basic difference between descriptive statistics and inferential statistics (or inductive statistics) is that descriptive statistics which aims to summarize a sample, rather than using the data to learn about the population that the

sample of data is thought to represent. They are not developed on the basis of probability theory [6]. Descriptive Statistics are the tabular, graphical, and numerical methods used to summarize data. Statistical inference is the process of using data obtained from the sample and to make estimates and test hypotheses about the characteristics of the population [7]. Summarizing of quantitative data includes [8]:

Frequency Distribution

Relative Frequency and Percent Frequency Distributions

Dot Plot

Histogram

Cumulative Distributions

Numerical methods used to summarize the quantitative data are [9]:

Mean

Median

Mode

Variance

Standard Deviation

CAQDAS:

Computer Assisted Qualitative Data Analysis Software (CAQDAS) is the use of computer software for qualitative research. It helps in transcription analysis, coding and text interpretation, recursive abstraction, content analysis and discourse analysis etc. It is used in psychology, marketing research, ethnography, and other social sciences. A CAQDAS program should have:

Content searching tools,

Coding tools,

Linking tools,

Mapping or networking tools,

Query tools,

Writing and annotation tools.

The advantages of using this software include: avoiding from manual and clerical tasks, time saving, managing huge amounts of qualitative data, increased flexibility, improved validity and auditability of qualitative research. Disadvantages include: increasingly deterministic and rigid processes, privileging of coding, and retrieval methods; reification of data, increased pressure on researchers to focus on volume and breadth rather than on depth and meaning, time and energy spent learning to use computer packages [10]. CAQDAS (Computer assisted qualitative data analysis software) is the good one technique in qualitative which helps us to find the true forecast and acceptable results in a specific topic [11]. A unique aspect

of using CAQDAS vs. hand-coding/analysis is the ability of the program to create visual representations of data-charts, graphs, trees-that help in analysis and potentially can help readers to more deeply understand the interpretations [12]. CAQDAS potentially makes qualitative inquiry more logical, transparent and trustworthy. CAQDAS such as NVivo can help in all the six steps of qualitative data analysis which are [13]:

Choosing a topic

literature review

Development of theoretical and conceptual foundations and research questions

Research design, Sample, context and negotiating access

Data collection and preparation

Data analysis and Discussion and final write-up

All the CAQDAS packages provide these following features that make qualitative data analysis much easier: structure of work, ‘ closeness to data’ and interactivity, explore the data, code and retrieve functionality, project management and data organization, searching and interrogating the database, writing tools and standard selection of output reports [14].

Do I agree?

I agree with the view that qualitative research methodology is gaining wide spread acceptance among researchers in social sciences circle but finds less

acceptance among basic scientists and Engineers who prefer to use quantitative (statistical) methods of research. In my opinion neither school of research is superior. Both when carried out correctly provide good research results. The superiority of qualitative or quantitative research depends on the data under study and the fruitful additions to the knowledge made by either of the methods. The qualitative descriptive study is the method of choice when straight descriptions of phenomena are desired. Such study is especially useful for researchers wanting to know the who, what, and where of events [15]. Qualitative research covers a broad area of philosophical positions. Interest in qualitative re-search is increasing in health department [16]. The purpose of qualitative analysis is to achieve greater understanding and to attain a higher level of conceptual or theoretical background than it can be achieved in any individual empirical study [17, 18]. Quantitative research is described by some as a " quick fix", it involves very little or no contact with the ' field' or people [19, 20].

Method which I will use:

Being an engineer I shall use quantitative research method in my research project because it will be carried out in a controlled environment i. e. it will be experimental. Based upon the test results I will validate my hypothesis and further statistical analysis will be conducted. (Insha' Allah)

Refrences:

[1] Haegeman, K., et al. (2013). " Quantitative and qualitative approaches in Future-oriented

Technology Analysis (FTA): From combination to integration?” Technological Forecasting

and Social Change 80(3): 386-397.

[2] Richard Tewksbury (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).

[3] McMillan, J. H., & Schumacher, S. (2009). “ Research in education” Pearson Education.

[4] Neuman, W. L. (2005). “ Social research methods: Quantitative and qualitative approaches”

Allyn and Bacon.

[5] http://statistics. about. com/od/HelpandTutorials/a/How-To-Conduct-A-Hypothesis-Test. htm

[6] Berenson, M. L. (1998). “ Basic business statistics: Concepts and applications” Prentice Hall

PTR.

[7] Bryman, A., & Cramer, D. (2005). Quantitative data analysis with SPSS 12 and 13: A guide

for social scientist. Routledge.

[8] De Veaux, R. D., Velleman, P. F., & Bock, D. E. (2009). “ Stats” Pearson, Addison-Wesley.

[9] Teddlie, C., & Tashakkori, A. (2008). Foundations of mixed methods research: Integrating

quantitative and qualitative approaches in the social and behavioral sciences. SAGE

Publications, Incorporated.

[10] Ann Lewins and Cristina Silver (2009). “ QUIC-Qualitative innovations in CAQDUS” 6th

edition

[11] Rudolf. R. S, Eva. A. A (2012). “ Facilitating the interaction between theory and data in

qualitative research using CAQDAS” Sage Publications, 109-131

[12] Linnea L. Rademaker, Elizabeth J. Grace, and Stephen K. Curda (2012). ” Using Computer-

assisted Qualitative Data Analysis Software (CAQDAS) to Re-examine Traditionally

Analyzed Data: Expanding our Understanding of the Data and of Ourselves as Scholars”

The Qualitative Report 2012 Volume 17, Article 43, 1-11

[13] Sinkovics, Rudolf R. and Eva A. Alfoldi (2012), “ Facilitating the interaction between

theory and data in qualitative research using CAQDAS,” in Qualitative organizational

research: Core methods and current challenges, Gillian Symon and Catherine Cassell (Eds.).

London: Sage Publications, 109-131.

[14] Garcíaâ€ Horta, J. B., & Guerraâ€ Ramos, M. T. (2009). The use of CAQDAS in educational

research: some advantages, limitations and potential risks. International Journal of Research

& Method in Education, 32(2), 151-165.

[15] Margarete Sandelowski (2000). “ Focus on Research Methods Whatever Happened to

Qualitative Description? Research in Nursing & Health, 2000, 23, 334-340

[16] Denis Walsh, Soo Downe (2005). “ Appraising the quality of qualitative research”

Midwifery (2006) 22, 108-119.

[17] Rona Campbell, et al. (2003). “ Evaluating meta-ethnography: a synthesis of qualitative

research on lay experiences of diabetes and diabetes care” Social Science & Medicine 56,

671-684.

[18] Winter, G. (2000). “ A comparative discussion of the notion of ‘ validity’ in qualitative and

quantitative research.” The Qualitative Report 4(3): 4.

[19] Williams, F., & Monge, P. R. (2001). Reasoning with statistics: How to read quantitative

research (pp. 127-141). London: Harcourt College Publishers.

[20] Bryman, A. (2006). “ Integrating quantitative and qualitative research: how is it done?”

Qualitative research, 6(1), 97-113.