New Horizons to Analyze Qualitative Data: Computer-Assisted Software

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Abstract:

Considering the demanding requirements of the network-based environment, which has increasingly influenced the different sorts of socialization, information exchanges, and educational opportunities, researchers highlighted how the realization of scientific research and projects affected by technology. Qualitative data analysis becomes a challenging task for researchers due to the availability of updated multimedia resources as videos, images, and records, which require more developed means to improve the research quality. This study examined PhD students' perspectives and attitudes towards incorporating Computer-Assisted Qualitative Data Analysis (CAQDA) to analyze the quantitative data collected from their pilot studies. The investigation followed the explanatory sequential method of research administered to second-year PhD 14 students enrolling at Mostefa Benboulaid University – Batna 2. Results revealed that there were not many users of CAQDAS among the participants. However, the tendency of its implementation is on the rise. Others claimed there are no clear advantages for which they would spend their time to learn using a given software.

Keywords: Attitudes, CAQDAS, mixed method approach, qualitative data.

1. Introduction:

Over the last decades, qualitative research has achieved wider acceptance, while the associated qualitative data analysis techniques saw significant developments and improvements. Within the realm of qualitative research, Di Gregorio (2010) stated that the emergence of

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Computer-Assisted Qualitative Data Analysis Software (CAQDAS) underwent couple of alterations as the development of independent software projects during the 1980s, the establishment of the CAQDAS community in the 1990s, to the improvement of CAQDAS 2.0 which is the tendency towards incorporating qualitative data analysis software with Web 2.0 collaborative online platforms. Accordingly, Mangabeira, Lee & Fielding (2004) claimed that the number of CAQDAS users is rising due to computer software development dealing with collecting and analyzing qualitative data. However, the field is still emerging, and there is still hesitation about using technology. Generally, researchers have different requirements and resources according to the field they are working on in which the most central features of the software used are the availability of support and the effortless mode to learn how to use them.

This paper sheds light on the use of computer-aided software to interpret qualitative data along with its advantages and disadvantages. The overall aim is to investigate the Ph.D. students' perspectives and attitudes towards incorporating CAQDAS to analyze their pilot studies' results and draw their attention that qualitative data can be analyzed using the software. In order to achieve these objectives, this ongoing article addressed the following questions:

1. What are the attitudes of Ph.D. students at Batna University towards integrating CAQDAs into their research field to analyze the qualitative data?
2. What are the advantages and disadvantages of incorporating technology-enabled programs in the interpretation of qualitative data?

2. The development of CAQDAS

Richarards (1995) defined the CAQDAS as a tool used for all qualitative research in a general manner wherein some consistent data category needs no further explanation, and these programs classify data while the researcher is setting up his research theory through a system of codes. Lee & Fielding (1991) assumed that scholastic researchers engaged in qualitative research developed CAQDAS packages in which early ones emerged as collaborative projects, then produced and sold as independent programs. Development in information and communication technologies enabled software developers to improve and upgrade their program packages. As the means of data collection developed through audio, video records, and pictures, programs for a better interpretation of

qualitative data evolved, mainly influenced by the qualitative content of collected data.

Roberts and Wilson (2002) argued that technology is similar to the tangible world with objects that individuals can inquire, comprehend, and manipulate, whereas qualitative research aims to investigate things from a human perspective. Thus, worries about the interference of this software when analyzing data would indulge the loss of the simple explanation brought by the qualitative data. Additionally, the naturalistic way a researcher interacts with the qualitative data that the written one would be better than the processed, although it is the inevitable means by which any researcher manipulates the data. Moreover, Friese (2010) emphasized the assurance of quality in qualitative research, to what extent one can implement validity and reliability of the collected data, and how the CAQDAS contributes to qualitative studies.

3. Advantages and disadvantages of CAQDAS

Researchers highlighted the importance of computing the qualitative data analysis (Richards & Richards, 1996; Richards, 1994; Lee & Fielding, 1996, St John & Johnson, 2000; and Wilson, 2002). Specific mechanical processes operate when interpreting qualitative research, which requires a laborious and time-consuming endeavor. These tasks can be achievable by computer wherein data recording, identification, coding, and retrieval become rapidly processed. Both Richards & Richards (1996) and St John & Jhonson (2000) claim that a researcher has limits no longer recalling processed information through the computerized method of treating the qualitative data. Accordingly, an infinite number of data is collected and analyzed effortlessly.

The central aspect of qualitative research is close to the data collected but neglected by the interference of the computing process. Engaging in the computerizing analysis of qualitative data separates the researcher from proceeding with the research. The ability to efficiently and speedily search, retrieve and analyze every bit of data, no matter how large the data set, by computer, is enticing. The concern lies where a large data set is selected merely because the availability of the technology makes it more achievable. The ease with which computer technology allows the researcher to use voluminous data may well lead to a trade-off of resolution for scope (Hinchliffe et al., 1997). In addition to that, one may question the convenience and credibility of the program used to analyze the qualitative data, which results in a lack of knowledge about the final results achieved (Richards & Richards, 1991 and St John & Johnson, 2000).

4. The method

4.1. Model of Research

This research matched the explanatory research method from a mixed research design. It has started by collecting and analyzing quantitative data, followed by a qualitative method developed based on quantitative data results (Creswell, 2017). The quantitative part of the study followed the survey method. The survey collects data through interviews or surveys (Fraenkel, Wallen, and Hyun, 2015) and aims to reveal the group's general view. In contrast, the qualitative data were collected from a group focus interview, a group of individuals with specific characteristics who focus on a given issue or topic as Anderson (1990) defined.

The survey method was selected to collect the quantitative data through Google Forms Application and emailed to the participants. Only 14 Ph.D. students answered the online forms. It consisted of 7 questions addressing the main aims of the research, which are (1) The method chosen for research work (2) the use of software packages for data analysis, and (3) Researchers' attitudes towards the CAQDAS.

Following the quantitative data analysis, a group focus interview was used as a data collection tool to ask the participants about their opinions towards using computed methods to interpret qualitative data. The interview enclosed three questions. The time allocated for the group focus communication ranged between 45and 55 minutes. The debate was recorded and then interpreted. The textual answers were depicted numerically by creating themes and analysis units within the framework of research problems.

4.2. The participants

The participants consisted of second-year postgraduate EFL students enrolling at Mostefa Benboulaid University - Batna 2, Algeria, conducting research related to Applied Linguistics and TEFL. In this context, 15 second-year Ph.D. students participated as they were carrying out their pilot researches. Volunteerism was the basis for the Ph.D. students' participation in this study.

5. The results

According to quantitative data collected from the survey, all participants took part in the study willingly. The email was delivered to 15 Ph.D. students. However, only 14 postgraduate students answered the forms. The student's field of study was Applied Linguistics and TEFL.
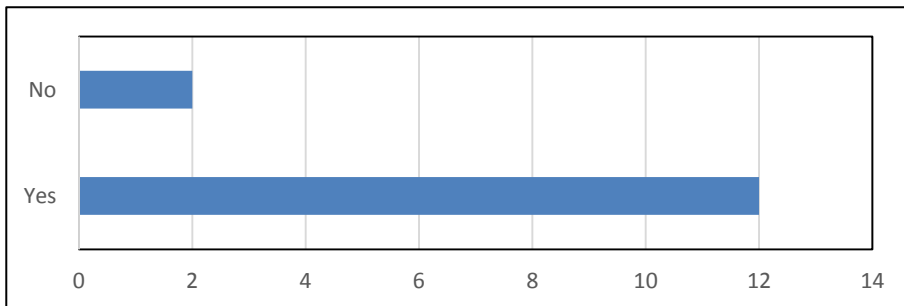
The reason behind choosing this sample population was to identify how they interpret the results collected from their pilot studies.

Figure N° 01: The choice of method in research

As illustrated in figure N° 01, the majority of correspondents (79%) were conducting experimental research. (14%) of the researchers were opting for an exploratory research design, whereas the minority (7%) chose an explanatory research method. None of the participants worked for a descriptive method.
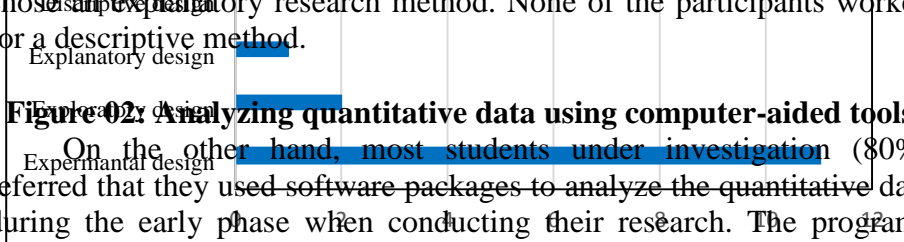
Figure 02: Analyzing quantitative data using computer-aided tools

On the other hand, most students under investigation (80%) referred that they used software packages to analyze the quantitative data during the early phase when conducting their research. The programs they know are Statistical Package for Social Sciences (SPSS), Excel for Microsoft Office, and Statistics and Words (STAT). On the other, (20%) of the Ph.D. students showed that they do not use any computing tool to analyze the quantitative data they had collected. Figure N° 02 showed the results.
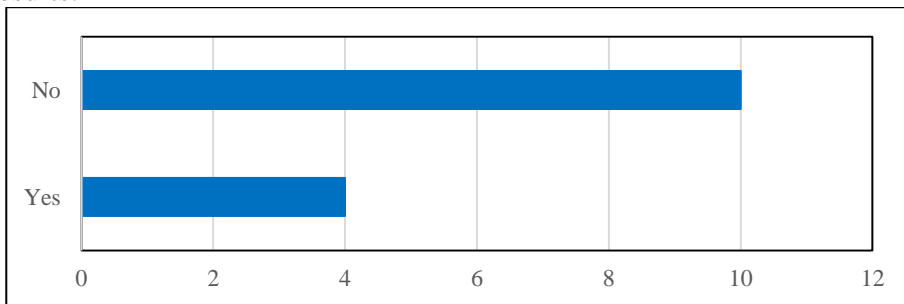
Figure 03: Analyzing qualitative data using computer-aided tools

According to the results demonstrated in figure N° 03, many researchers (72%) participating in the study do not use software programs when interpreting qualitative data as they do not know any of these packages. They were unaware that there are computing programs that analyze the qualitative data. Nevertheless, the other (28%) participants use computer-assisted packages to interpret the qualitative data. The two major software that the students mentioned were ATLAS and N VIVO.
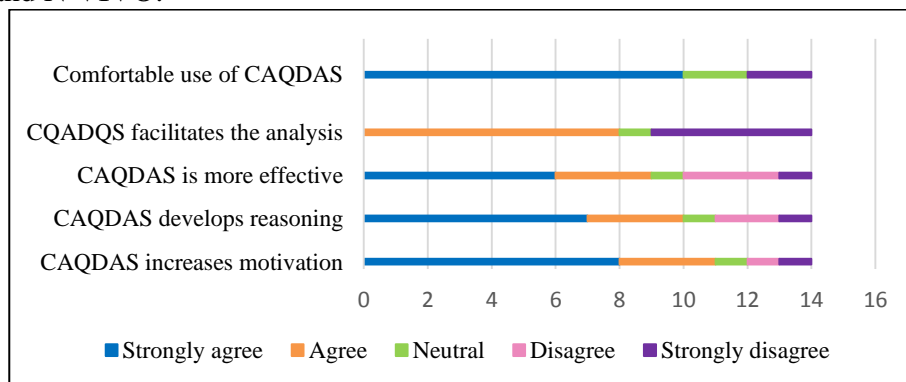

Figure N° 04: Researchers' attitudes towards the use of CAQDAS

Following researchers' answers, they had varied attitudes towards using computer-aided packages to analyze the qualitative data, displayed in figure N° 04. Although (72%) of the participants strongly agreed that they feel comfortable with the idea of using technology-assisted programs to process qualitative research, others (14%) responded neutrally to the statement, and the other minority (14%) has strongly disagreed.

Almost the majority (60%) of participants approved that the incorporation of CAQDAS into their research would facilitate analyzing the qualitative data, and they believe that they are beneficial and more effective than the traditional hand-tailored interpretation. Nevertheless, some researchers (10%) reacted unbiasedly, while nearly (30%) strongly rejected both statements claiming that the software does not ease the research, as they are not effective.

The majority (65%) of students consider the CAQDAS as motivational and help promote the researchers' reasoning and understanding of the processed research. The minority (14%) of the participants were neutral. However, the rest (14%) had strongly declined the role of CAQDAS in improving the researchers' thoughtful insights and influencing them.

During the group focus discussion, the participants formed two groups. The first was calling for integrating computer-aided tools into qualitative research as they provide the researchers with a great many benefits. They claim that such software help to organize, manage, and analyze information. They also save time, manage large amounts of qualitative data, increase flexibility, and are free from manual and clerical tasks. They had even shown great interest in learning using this software.

On the other hand, the other researchers were mainly concerned with the time and energy allocated to learn using these updated software packages and their availability. They also stated that dealing with a massive amount of data would shift their focus from quality to quantity, so they would be more interested in treating voluminous qualitative information, which heavily puts pressure on researchers. This group highlighted that they would not consume time training to use such programs, which requires time and concentration.

6. Discussion

According to the results of the quantitative data, the majority of researchers had positive attitudes towards the use of computer-aided packages, which interpret the qualitative data. According to Richards (1995), using the CAQDAS influences the researchers and increases their research readiness.

A significant debate shed light on the positive and negative impacts of incorporating software programs into qualitative research. Reflecting on participants' interactions and other previous researches (Richards & Ritchards, 1996; Fielding & Lee, 1998 and St John & Johnson 2000), the data management features of CAQDAS software enables researchers to work with larger datasets without losing track of both the details of the data and the developing analysis. However, vast sets of analyzed data would affect the basics of the qualitative method of research, which is getting closer insights about the examined target situation.

Weitzman and Miles (1995) identified the importance of researchers feeling close to the data they are analyzing. There is disagreement about whether or not CAQDAS software makes this easier or harder. Many software users in the 1980s felt that using computers (for all its other benefits) might create a gap between the researcher and the data set. However, Fielding and Lee (1998) have argued that using manual methods cannot guarantee closeness to data, and in many cases, it is the amount and nature of data can be overwhelming.

Tesch (1990) argued that CAQDA software saved time and was more efficient than manual procedures. As Fielding and Lee (1998) cautioned, the danger is that computers facilitate quick and dirty research with the possibility of premature closure. In an examination of many published papers that mentioned the use of CAQDAS, Seale (2001) noted that many did very little more than a simple code and retrieve, which then formed the basis of a thematic report. Many papers referred to grounded theory, but even here, some only undertook what has been referred to as 'pattern analysis' rather than use the complete analytic procedures of grounded theory.

Like any approach to processing data, CAQDAS has limitations. Researchers who are not confident using computers and new programs may take longer to learn how to use CAQDAS than learning a particular strategy of managing the data by hand (Fielding and Lee 1998).

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