MAG Scholar®
Marketing in Asia Group

AJBR
Asian Journal of Business Research Volume 14 Issue 3, 2024
ISSN 2463-4522 e-ISSN 1178-8933 DOI: 10.14707/ajbr.240177

Editorial

Qualitative data analysis software: Reflecting on 10 years of Quirkos

Hiram Ting[1], Daniel Turner[2]*, Mumtaz Ali Memon[3,4], Jiankun Gong[5]

[1]*International College, Krirk University, Bangkok, Thailand*
[2]*Quirkos, Edinburgh, United Kingdom*
[3]*Faculty of Business, Sohar University, Sohar, Oman*
[4]*Chandigarh University, Mohali, India*
[5]*Department of Media and Communication Studies, Universiti Malaya, Malaysia*

*Corresponding author: daniel@quirkos.com

Abstract

Qualitative data analysis (QDA) software tools are often underutilised in business studies, although they can significantly enhance the speed and rigour at which qualitative data can be analysed. This Editorial outlines the core features and benefits of one qualitative software package, namely Quirkos, which has now been available for 10 years. It was originally designed to make the qualitative data analysis process more participatory, where new researchers with specialist knowledge but limited experience can contribute to data interpretation. We thus detail its key operations and recent development as well as compare it against other paper-based and non-specialist software, aiming to illustrate how Quirkos can facilitate the interpretation, collaboration, and reporting of qualitative findings while preserving data richness and depth. The availability, ease-of-use, and visual and tactile experiences provided by this software can increase the appeal of CAQDAS. It is believed that greater acceptance and understanding of Quirkos can encourage business researchers to adopt more qualitative methods, explore issues in greater depth, and increase confidence in their findings to draw meaningful conclusions.

Keywords: Qualitative, Research, Software, CAQDAS, Quirkos, Qualitative data analysis

Publication Details: Received 13 October 2024; Revised 15 November 2024; Accepted 9 December 2024

Introduction

Qualitative research generates data of great detail and depth, albeit with smaller sample sizes than its more popular quantitative counterpart in business literature. Qualitative data is inherently difficult to interpret due to its variability, complexity, and open-ended nature, a challenge compounded by the range of different techniques available for analysis. In this regard, computer-assisted qualitative data analysis (CAQDAS) software can help researchers manage their data, such as by recording codes and visualising themes. Quirkos is one such easy-to-use tool designed to facilitate qualitative data analysis (QDA). A decade after its introduction, we have written this Editorial to reflect on the operation and usefulness of this software.

Background of Qualitative Software

Research designs that incorporate qualitative methodologies can be invaluable for exploring complex issues, especially when theory generation is a vital first step in understanding such phenomena. While quantitative methods can validate findings with well-defined research questions, ensuring these questions are correctly focused and worded requires in-depth qualitative knowledge obtained through close engagement with the target population in addition to critical review of literature. To this end, qualitative techniques such as interviews, focus group discussions, and open-ended surveys can provide unique insights into respondents' perspectives.

However, since qualitative data collection relies on verbose informal responses, it generates extensive, detailed, and unstructured data. Managing a qualitative dataset, therefore, is challenging despite its relatively small sample size. To assist researchers in this endeavour, multiple CAQDAS software have been developed over the past decades for the management and interpretation of qualitative data (Wolski, 2018). Notwithstanding the preference of some to conduct manual analysis using general spreadsheets, word-processor software, or print-outs and highlighters, dedicated CAQDAS tools offer many advantages. Notably, they make it far easier and faster to perform coding, organise and categorise codes/themes, search across multiple documents/sources, and visually display thematic patterns. Critics of qualitative software, on the other hand, contend that its usage separates the researcher from the data, encouraging reliance on quantified metrics rather than the data itself. These claims have been consistently debunked (Jackson et al., 2018).

Initially, CAQDAS software incorporated Machine Learning (ML) models (e.g., QDAMiner), which execute automated functions such as sentiment analysis on large sets of textual data. More recently, these software have introduced generative artificial intelligence (GenAI) models (e.g., ChatGPT), aiming to perform better in summarising or coding qualitative data. Distinct from their ML predecessors, GenAI models are trained on large amounts of pre-written data and designed to reproduce the written text in particular styles, based on the probability of certain words and phrases appearing in a sentence. Nevertheless, as AI software are largely predictive generators of text rather than interpretive analysis tools, they tend to ignore certain data segments and produce inconsistent or inaccurate outputs; this means they are poorly optimised for data summarisation and coding (e.g., van Manen, 2023).

Consequently, whether GenAI tools are appropriate for qualitative data analysis is a matter of debate. In fact, the most popular qualitative data analysis techniques, such as grounded theory and thematic analysis (Braun and Clarke, 2002), do not advocate the use of GenAI. It is also questionable whether automating the interpretation of qualitative data is desirable within academic settings, since it is among the most crucial skills for a qualitative researcher. Moreover, qualitative research tends to deal with complex and acute problems, requiring new theoretical explanations that are not currently available in the literature or pre-trained models (Nowell et al., 2017; Busetto, Wick and Gumbinger, 2020; Rittel and Webber, 1973). Therefore, the experimental nature of qualitative research—in that it seeks new answers and insights instead of testing existing hypotheses—demands experimental approaches to analysis as well. Researchers may benefit from the notion of 'play' by sampling different analytical tools or sets of codes/themes to see which best illuminates the data. CAQDAS software programmes facilitate this flexible approach, as they allow the trial of various analytical tools without having to restart the process from scratch (Turner et al., 2021).

Quirkos is a CAQDAS software tool that has been publicly available for over 10 years. It was originally designed to make the qualitative data analysis process more participatory, where new researchers with specialist knowledge but limited experience can contribute to data interpretation. As a simple tool that can be taught in 20 minutes, it aims to provide a quicker entry path for beginners. Other software typically requires several hours or days of training, but are powerful for large or mixed-method datasets. Quirkos, on the other hand, is useful for students, novice qualitative researchers, and researchers analysing small text-based datasets.

Initially released as an installable programme that saves data to the local computer, Quirkos now offers a web-based interface that stores data in secure cloud storage. This updated version allows for live collaboration and data synchronisation across devices. The following sections demonstrate the most common qualitative data analysis operations of Quirkos. While the examples provided are specific to this software package, the basic principles apply to any CAQDAS software.

Qualitative Analysis Tasks Using Quirkos

Coding and Text Analysis

The most common application of CAQDAS software is to identify and catalogue sections of data on a particular topic, compiling them to be viewed together. This allows the researcher not only to review different topics discussed in one transcript, but also to review a single topic across multiple transcripts and explore differences in opinion.

Quirkos aims to be agnostic towards analytical approaches, such that it can quickly create new codes for methodologies where codes or themes emerge as the researcher reads the data (e.g., thematic analysis, grounded theory). Alternatively, Quirkos allows researchers to start with pre-existing codes, standardised frameworks, or evaluation templates derived from previous studies. The programme even enables the replication of a coding structure from one project across multiple different datasets.

Regardless of which approach the researcher employs, the qualitative analysis process

starts with creating a code and adding text the researcher deems relevant to that code—either by dragging-and-dropping the text onto the code, dragging-and-dropping the text onto an empty space to create a new code, or clicking on a code after highlighting the text. The selected text is thereby assigned to the code, marked by a colour-coded highlight and a stripe to its left. One text segment can be assigned to as many codes as necessary, allowing the mapping of code co-occurrence as well as enhancing flexibility in creating both generic and specific codes. Codes can also be stacked on each other to create subcategories or assigned to one or more non-hierarchical groups.

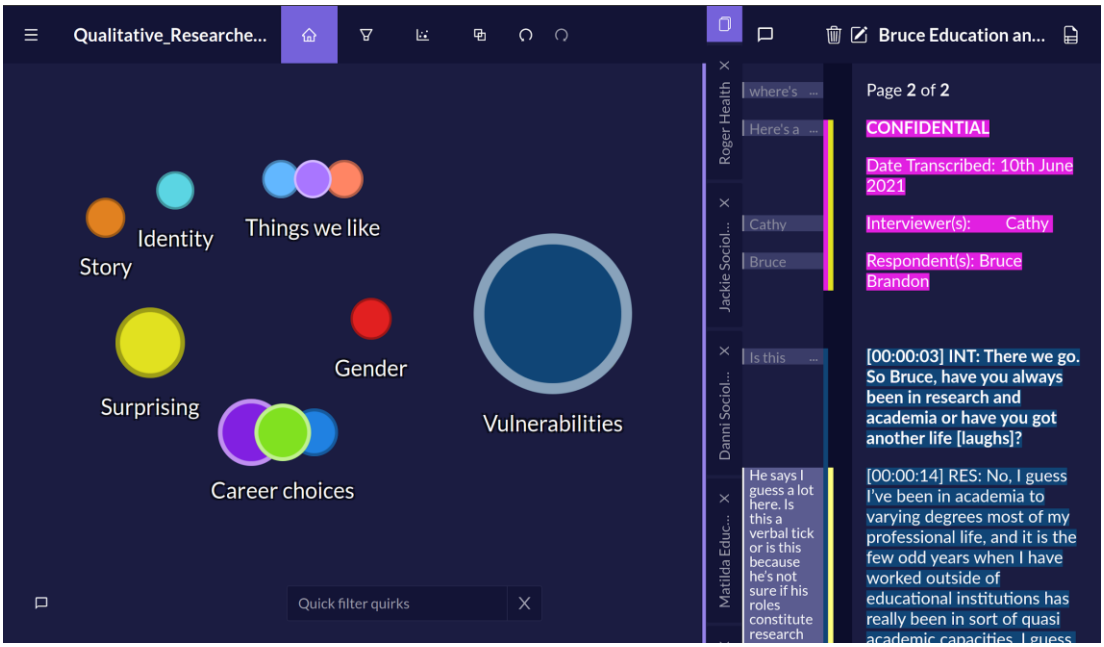
Perhaps the most useful aspect of CAQDAS software is the code-and-retrieve functionality. When reporting qualitative findings for a publication, thesis, or other output, it is common practice to embed quotes from the data, both to support the researcher's interpretive claims and to substantiate discoveries with authentic narratives. For this purpose, once coding is done, researchers can easily use the software to display text assigned to a code across all data sources. In Quirkos, specifically, researchers can select one, several, or all relevant quotes and copy-paste them into their manuscript, complete with attribution to the quotes' source.

Additionally, meta-coding categories can greatly accelerate the writing process. For example, creating a code labelled 'Key Quotes' allows the researcher to mark important quotes and retrieve them quickly when writing. During thematic coding, a single text extract can be tagged as a 'Key Quote' as well as part of a theme (e.g., 'Marketing'). Using the Overlap view in Quirkos, researchers can see all their 'Key Quotes' for a particular theme, saving time that would otherwise have been spent repetitively reviewing coded segments. Meta-codes can also be useful for cross-referencing contradictions or unclear statements that require follow-ups.

Some qualitative data analysis techniques prioritise the data's language over codes. For example, in-vivo coding and interpretative phenomenological analysis (IPA) typically take a line-by-line approach, in which the raw textual data is used to summarise each statement (Larkin et al., 2006). These summaries might not fall under a common theme upon first interpretation, and so are revisited in a second read-through. In Quirkos, this process is facilitated by the 'memo' function. Rather than dragging a selection of text to a code before attaching it to a theme, the text can be dragged to the 'memo' column on its left. Akin to writing in the margins of a printed transcript, the memo allows a brief written reflection to be attached to a text segment, remaining visible in any view displaying that text. Memos can be subsequently used to select their corresponding text and add them to themes in the second IPA stage.

Beyond coding, it is beneficial for researchers to keep a log of their decision-making process and challenges during analysis. Often part of a research journal or reflexive diary, this practice can be performed in Quirkos using the 'Chat' function (at the bottom right of the viewer). Researchers can add comments that are then stored in sequential order with a date/time stamp and exported as a complete log. If multiple researchers are working on a project simultaneously, the 'Chat' function serves as a live conversation platform for discussions regarding codes/themes. Figure 1 presents the Quirkos interface.

Figure 1: The main Quirkos interface, with codes (left) and text data (right)

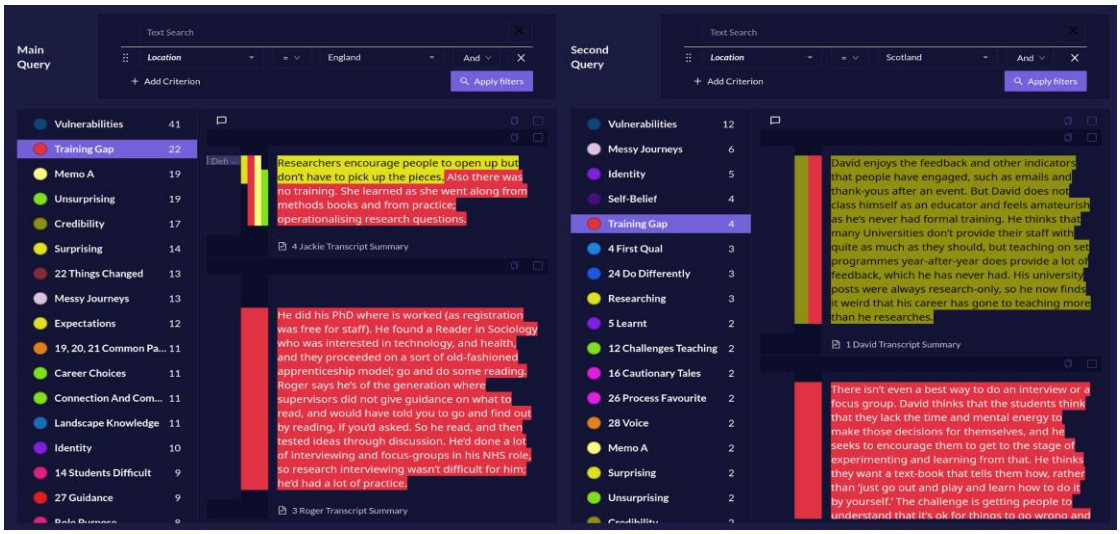


Data Management

Although often overlooked in lieu of their coding features, CAQDAS packages also work as powerful data management tools. By entering respondent attributes such as demographics, roles, or data types, researchers can not only keep track of the project's recruitment profile but also generate visualisations and statistics (e.g., gender, location) that are crucial for sub-set analysis.

In Quirkos, data management is achieved using the 'Properties' function, which consists of open-ended metadata fields assigned to each data source in a project. The 'Filter' function further allows researchers to view results from specific sub-sets of the data. For example, it might be beneficial to compare responses from two regions or various age ranges. Quirkos also offers a side-by-side comparison view, displaying two distinct queries at once (see Figure 2 for example). With this feature, researchers can not only evaluate the varying number of codes across two sub-sets, but also directly read and compare differences in the text. The purpose here is for researchers to be able to comprehensively explore all quotes from a particular sub-set of data. While Quirkos provides a numerical count of the code occurrences as well, this 'quantification' should not be relied upon. Rather, in qualitative research, it is essential to closely re-examine textual data and compare it with other text extracts, for 'what' is said in the text is far more significant than 'how often' it is said.

Figure 2: Side-by-side comparison view of two participant groups by location



Ultimately, as a data management tool, Quirkos enables researchers to combine imported data sources and assign their properties, generating useful metadata for managing recruitment, consent, and other practical aspects of research. Other uses of this function include the construction of graphs on respondent demographics and the integration of multiple data sources (e.g., interviews, surveys, focus groups, or published literature) into one project for simultaneous coding. When doing so, researchers can use the 'Filter' feature to view results from one data source or all data sources.

Collaboration and Cloud Data

Researchers are increasingly seeking qualitative software tools that streamline data management, especially for collaborative projects involving many individuals. While traditional offline CAQDAS software can achieve such collaboration by merging projects or 'locking out' a project to restrict access to one member at a time, it requires a great deal of management work for the project lead. The leader must manually merge the project at fixed times (while cajoling team members to complete and submit their tasks on time) or set a work schedule to avoid overwriting or creating multiple versions of the project.

In light of this evolving need, Quirkos now offers a cloud storage option for multiple researchers to work simultaneously on the same project, with each being able to access the most current version of the project across all their devices. This facilitates an array of possible approaches for a group of researchers: they can code separate data sources at the same time, thus accelerating the process; or they can use the same coding framework to confirm their interpretation of the data, increasing the trustworthiness and rigour of the analysis. Nevertheless, cloud storage must be equipped with adequate safeguards to protect the security and confidentiality of qualitative data. Servers must be located in regions with appropriate user regulations, and should be backed-up, well-maintained, and securely encrypted to prevent accidental or malicious access.

With these systems in place for Quirkos Cloud, there was significant demand from qualitative researchers for automatic transcription services, powered by ML models that generate accurate text representations of written speech. Text representations of qualitative audio data are indeed highly useful for analysis; not only is it much quicker for a researcher to read transcripts than listen to audio recordings, but text data is also easier to manage when coding, searching for keywords, and embedding quotations into research publications.

While several tools already exist for transcription, they lack the accuracy or security required for qualitative data. There is also no guarantee that the data input into these software would not be repurposed for training. Alternatively, there are offline tools that can be installed on desktop computers for automated transcription; however, these require powerful hardware to run and require researchers to possess technical knowledge on operating large ML models. To this end, Quirkos has set up a powerful private server to run an open-source transcription tool, incorporating offline ML models and end-to-end encryption to prevent data sharing and maintain confidentiality.

Exports and Visualisations

Writing and disseminating research findings is a key aim for researchers, whether to complete their dissertation, publish a journal article, or inform evidence-based policies and practices in their field. CAQDAS software, however, can neither collect data nor write outputs automatically. It supports only the middle stage of a research project, such as by swiftly identifying specific coded text to use as quotes in data interpretation. Nonetheless, certain software tools can generate exports and visualisations that help researchers communicate and summarise their findings.

In Quirkos, visualisations can be created for coding structures, relationships between codes, and data attributes (e.g., demographics), aiding researchers in interpreting and seeing the data from new perspectives. These illustrations can be generated in Quirkos' output along with results on codes, themes, and coding structures. Whether they are included in the data interpretation section or attached as the appendix of a publication, visualisations communicate findings more clearly to reviewers, supervisors, editors, and readers alike.

While Quirkos does not provide quantitative data analysis tools, it has the useful 'Export' feature that transfers data into spreadsheet formats (e.g., Excel or CSV), enabling researchers to analyse coded data using statistical packages (e.g., R or SPSS). This function is particularly valuable for larger projects that require quantitative analysis, such as tests of confidence levels, inter-rater reliability, and significant differences between sub-sets of data.

Conclusions

Qualitative research develops novel understanding of phenomena and expands research ideas into new communities, such as by applying concepts from Western discourse to Asian settings (e.g., Soonsap et al., 2023) or deep-diving into a unique cultural context (Safari et al., 2023). However, these complex approaches can yield an overwhelming amount of data. CAQDAS tools, therefore, are extremely valuable in improving the

speed and efficiency of qualitative analysis. Specifically designed for qualitative research, Quirkos accords far more prominence to codes and quotes, generating outputs and visualisations directly relevant to the research. The availability, ease-of-use, and visual and tactile experiences provided by this programme can increase the appeal of CAQDAS, especially to researchers who typically rely on paper-based analysis or generic software (e.g., Word or Excel). While other qualitative software may have more powerful features to handle large-sized or mixed-methods datasets, for most researchers, the streamlined approach of simpler tools like Quirkos grant significant savings in time and training. Ultimately, greater acceptance and understanding of this software can encourage business researchers to adopt more qualitative methods, explore issues in greater depth, and increase confidence in their findings to draw meaningful conclusions. More information about Quirkos can be found at https://www.quirkos.com/index.html.

References

Braun, V. and Clarke, V., (2002), *Thematic Analysis: A Practical Guide*, Sage, London.

Busetto, L., Wick, W. and Gumbinger, C., (2020), "How to use and assess qualitative research methods", *Neurological Research and Practice*, vol. 2, no. 14.

Larkin, M., Watts, S. and Clifton, E., (2006), "Giving voice and making sense in interpretative phenomenological analysis", *Qualitative Research in Psychology*, vol. 3, pp. 102-120.

Nowell, L.S., Norris, J.M., White, D.E. and Moules, N.J., (2017), "Thematic Analysis: Striving to Meet the Trustworthiness Criteria", *International Journal of Qualitative Methods*, vol. 16, no. 1, pp. 1-13.

Jackson, K., Paulus, T. and Woolf, N. H., (2018), "The Walking Dead Genealogy: Unsubstantiated Criticisms of Qualitative Data Analysis Software (QDAS) and the Failure to Put Them to Rest", *The Qualitative Report*, vol. 23, no. 13, pp. 74-91.

Rittel, H.W.J. and Webber, M.M., (1973), "Dilemmas in a general theory of planning", *Policy Sciences*, vol. 4, no. 2, pp. 155-169.

Safari, A., Afriza, L. and Riyanti, A., (2023), "Tourism Village Assistance in Purwakarta Regency", *Asian Journal of Business Research*, vol. 13, no. 2, pp. 1-24.

Soonsap, P., Ashton, A. S. and Lee, T. J., (2023), "The Role of Slow Food in Destination Image Development", *Asian Journal of Business Research*, vol. 13, no. 1, pp. 101-120.

Turner, D., Ting, H., Wong, M.W., Lim, T.Y. and Tan, K.L., (2021), "Applying Qualitative Approach in Business Research", *Asian Journal of Business Research*, vol. 11, no. 3, pp. 1-13.

van Manen M., (2023), "What Does ChatGPT Mean for Qualitative Health Research?", *Qualitative Health Research*, vol. 33, no. 13, pp. 1135-1139.

Wolski, U., (2018), "The History of the Development and Propagation of QDA Software" *The Qualitative Report*, vol. 23, no. 13, pp. 6-20.

All papers are published under the Creative Commons Attribution 4.0 International (CC BY 4.0). For more details, visit https://creativecommons.org/licenses/by-nc/4.0/.