International Journal of Human Post-Edited AI Qualitative Data Analysis
ISSN: (Online); ISSN: (Print)
DOI:
Journal Homepage: www.researchpublication.org

RPO
RESEARCH PUBLICATION ORGANIZATION
The Green, 21552, in the City of Dover, DE, County of Kent, Zip Code: 19901, USA

| RESEARCH ARTICLE

NVivo15 and ATLAS.ti 2025: A comparative study of the main features for thematic analysis

Bouali Anas[1], Khiri Majda[1], Labrini Ibtihal[1]
[1]Master's Student, Theoretical and Applied Linguistics, Faculty of Letters and Human Sciences, Mohammed V University, Rabat, Morocco.
Corresponding Author: Bouali Anas, E-mail: boualianas999@gmail.com

| ABSTRACT
Thematic analysis, as described by Braun and Clarke (2019), is a widely used method in qualitative research. Given that qualitative data analysis can be complex and time consuming, researchers often need specialized software to assist them. This study aims to evaluate and compare two qualitative data analysis software-NVivo 15 and ATLAS.ti 25- based on their AI-assistance, summarizing capabilities and collaborative features. It delves into each software's characteristics and gathers them into relevant themes accordingly. To do so, an analysis of secondary data, specifically videos made by doctors and computer experts was adopted. The results indicate that NVivo 15 has the upper hand regarding summarizing abilities, collaboration features, and security matters while ATLAS.ti 25 has a slight superiority in coding abilities and an enormous superiority in accessibility. This study could be used as a guiding compass for researchers who are conducting a qualitative study, specifically thematic analysis on open ended qualitative data.

| KEYWORDS

ATLAS.ti 25, NVivo 15, Qualitative Data, Software Comparison, Thematic Analysis.

| ARTICLE DOI:

1. Introduction

The success of a research project relies to a great extent on the research design and the data analysis methods chosen. In qualitative research, researchers tend to deal with vast volumes of unstructured data, such as interview transcripts, field notes, video recordings, and other types of textual or visual data. Analysis of such data without any predetermined plan can be overwhelming and inefficient. Qualitative research differs from quantitative research in that it is not initially driven by a priori theory; rather, it lets theories develop naturally throughout the data analysis process (Flick, 2009; Graue, 2015). Thematic analysis has emerged as one of the most popular qualitative data analysis methods, owing chiefly to its inherent flexibility. This enables researchers to find, analyze, and interpret frequent motifs or themes within a dataset without the constraints of an a priori theoretical framework (Braun & Clarke, 2020). Yet, for all its strengths, thematic analysis has also regularly been characterized as time-consuming and complicated, particularly when applied to large datasets. Jacelon and O'Dell (2005) posit that a single interview transcript can yield numerous pages of data; multiply this output across several participants and the amount of resulting information is considerable. In the absence of some effective strategy for the management and control of such data, researchers can become daunted with ease. Polit and Beck (2006) refer to this process as "labour-intensive" and note the absence of standard procedures, rendering qualitative data analysis flexible yet difficult.
To meet these challenges, researchers are ever more turning to Qualitative Data Analysis Software (QDAS). These software programs are developed specifically to assist in collecting, organizing, and analyzing qualitative data. QDAS promotes more systematic and transparent approaches by offering features such as code management, data visualization, and even sophisticated options like AI-assisted coding (Silver & Lewins, 2014; Paulus & Lester, 2021). By facilitating more efficient control over the analytical process, such tools render qualitative research more traceable and rigorous. Tak, Nield, and Becker (1999) hold the view that QDAS can go a great way in saving time for researchers on manual tasks of sorting, cutting, pasting, and filing data, and release them to devote more time to the key areas of interpretation. Some of the leading QDAS software employed in contemporary research are NVivo and ATLAS.ti. These packages have seen extensive application across numerous disciplines, including social sciences, education, media studies, and health research. Every package has a broad spectrum of functionalities aimed at augmenting the
The level and quality of qualitative analysis are highly reliant on the software utilized. QSR International's NVivo 15 is renowned for having an easy-to-use interface and excellent connectivity with external data sources like surveys, social media websites, and bibliographic databases. The tool rides on AI-powered features such as automated coding, summarization, sentiment analysis, and facilitating teamwork collaboration (QSR International, 2023). In contrast, ATLAS.ti 2025 from Scientific Software Development GmbH is renowned for its robust visual possibilities and flexible data management. The tool handles various data types such as text, audio,

video, and pictures, and has included artificial intelligence to enhance its automatic coding, network visualization, and sentiment analysis features (Friese, 2019; ATLAS.ti, 2024).

With the growing use of computer software in qualitative research and the growing sophistication of data, a comparative analysis of NVivo 15 and ATLAS.ti 25 is both topical and appropriate. In this study, the specific interest is in how these two software programs facilitate thematic analysis, one of the most popular approaches to qualitative research. Through an exploration of their features, their strong and weak points, this study aims to offer revealing information on which program performs better with different research demands. Along the way, it will make recommendations for researchers who want to select the most suitable tool for qualitative data analysis.

Research objectives

This research examines a key aspect of qualitative research which is software-assisted thematic analysis. It explores how two programs, NVivo 15 and ATLAS.ti 2025, assist researchers in organizing and analyzing qualitative data. The main purpose of this study is to gain a clear image of the programs' features, to understand how they support the analytical process as well as to determine which software is more effective. First, in this research, we examine the strengths and limitations of each software, focusing on accessibility, coding, collaborative, and summarizing abilities. Then, based on those features, we aim to provide recommendations for researchers on which software may be the better choice depending on their needs.

Research questions

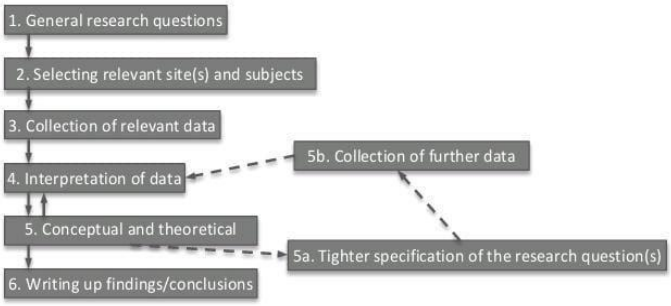
RQ_1: What are the key features of NVivo 15 and ATLAS.ti 2025?
RQ_2: Which one of the two programs is better for qualitative data analysis?

2. Literature Review

2.1 Qualitative research and qualitative data analysis:

The most crucial part when conducting research is deciding on the research design. Choosing the wrong research type and data collection methods can lead to a closed ending. Whether the researcher decides to follow a qualitative, quantitative, or mixed method approach, depends on the researcher's objectives. In this study, the focus will be on qualitative research and qualitative data analysis (QDA). According to Flick (2009: 14) qualitative research has the following features: "The correct choice of appropriate methods and theories; the recognition and analysis of different perspectives; the researchers' reflections on their research as part of the process of knowledge production; and the variety of approaches and methods". Bryman & Bell (2011: 392) state: "Two particularly distinctive aspects of the sequence of steps in qualitative research are the highly related issues of the link between theory and concepts with research data". Qualitative analytic methods can be roughly divided into two camps. The first camp is strongly based and entrenched in particular theoretical ground while the second camp is fully independent and detached from a specific theory. Another important distinction is that qualitative research, in contrast to quantitative research which consists of theory testing, is data driven. Moreover, in this type of research you do not start with a theory, but a theory could emerge after your research. What is advisable is to start with research questions. According to Graue. C (2015) "Formulating an appropriate research question or questions will have the following impact: It gives guidance for literature search, research design, which data needs to be collected and from where, for the analysis and writing-up the data. Additionally, it helps the researcher to stay close to the object of study and therefore prevents him from unnecessary circuits. However, the process of qualitative research is more than just coming up with the research questions, numerous other steps are involved as it is presented in the following figure:

Figure 1. *Qualitative analysis process*



Source: Bryman & Bell 2011: 390.

As was mentioned above, this study focuses on QDA and therefore will not be tackling the other steps. Qualitative data analysis has the following general aims (Flick 2013: 4): Describe a phenomenon in some or greater detail-Comparing several cases on what they have in common or on the differences between them -Develop a theory of the phenomenon under study from the analysis of empirical material. Qualitative research can be conducted through observation, audio and video recordings, group interviews and collection of documents. Moreover, Jacelon and O'Dell (2005) states "qualitative data, usually in the form of transcripts of interviews and field notes, pile up rather quickly. The transcript from one interview translates into 20 or 30 pages of single-spaced type. Multiply this by the number of participants and the number of interviews for each participant and you have a mountain of data. "This is the reason Polit and Beck (2006) describes qualitative data analysis as "challenging, labour-intensive, and guided by few standardized rules". Therefore, data analysis will be challenging without a good strategy for organizing the data. This is when qualitative data analysis software (QDAS) comes in hand to provide researchers with the support needed and facilitate their work. Tak, Nield, and Becker (1999) describe a benefit of QDAS as "dramatically reducing the amount of time spent in the endless cutting, pasting, copying, and filing that is required to maintain qualitative data in an adequately organized way". There are several QDAS programs available for researchers, however, this study will only focus on two.

2.2 Thematic analysis

Thematic analysis (TA) is one of the most widely used qualitative analysis method (Boyatzis, 1998; Roulston, 2001); It is a skill, and a tool used within different qualitative methods ,(Holloway and Todres,2003; Boyatzis, 1998) even though some researchers, like Brown, claims its independence as an own proper method. It involves the identification of themes through intense and repeated reading of the data (King, 2004; Rice & Ezzy,1999), and it gives the ability to any research to understand and analyse the gist, potential, details, and hidden matters of an issue more widely, (Marks & Yardley, 2004). Namey et al. (2008) explain TA accurately and simply by saying the following:

> **"***Thematic Moves beyond counting explicit words or phrases and focuses on identifying and describing both implicit and explicit ideas. Codes developed for ideas or themes are then applied or linked to raw data as summary markers for later analysis, which may include comparing the relative frequencies of themes or topics within a data set, looking for code co-occurrence, or graphically displaying code relationships***"**. (p.138)

Thematic analysis is considered within the second camp of the qualitative data analysis, which operates freely without any theoretical constraints or foundation, due to its flexibility and reliance on the researchers' logic more than a specific framework. However, as Braun and Clark (2020) explain, TA is not atheoretical or inferior to other fully theoretical disciplines. In fact, thematic analysis combines with those fields to give us a more complete methodology such as thematic discourse analysis. Researchers argue that analysis is essentially thematic, but it is either claimed as something else, such as discourse analysis, or even content analysis (e.g., Meehan, Vermeer, & Windsor, 2000), or it does not identify with any particular method at all, for example, you may find this sentence recurring in the methodology explanation ''data were subjected to qualitative analysis for commonly recurring themes" (Braun & Wilkinson, 2003). Thematic analysis requires a number of implicit choices regarding data collection, themes 'sizes', patterns of analysis, the choice of a theme …. etc. A theme is not constructed based on quantitative measures and patterns only, but also due to his relevance and significance to the research questions. Themes or patterns within data can be identified in one of two primary ways in thematic analysis: either in an inductive way, also called bottom-up (e.g., see Frith & Gleeson, 2004), or in a deductive fashion, also called theoretical or top-down way (e.g., see Boyatzis, 1998; Hayes, 1997).

2.2.1 Manner of conducting Thematic Analysis:

Research in the social sciences is broadly divided among deductive, inductive, and abductive research designs (Mantere & Ketokivi, 2013; Reichertz, 2013), including thematic analysis.

2.2.1.1 Inductive fashion for Thematic Analysis:

An inductive approach, also called a bottom-up approach or, means the themes identified are strongly and directly linked and related to the data themselves (Patton, 1990). It requires the researcher to directly form themes from the data without any pre-set codes or theory. With that being said, it is normal or even accepted that the questions asked to the participants, if the researcher opts for an interview, focus group or any interactive quantitative methodology in which the researcher should ask questions to some participant in a qualitative manner, would have little relation to the themes formed. This approach falls within the data driven approach. We can compare this to the 'corpus-driven' paradigm of CL research in corpus linguistics in which the researcher does not work with a pre-theory but relies on his corpus; We can note that even corpus linguistics may embrace thematic analysis for creating summarizing themes of the recurring patterns or topics within the corpus. To give a clearer idea about the reason that would make a researcher opts for thematic analysis while he is working on corpus linguistics is the nature of this discipline which is its need to observe repeated pattern and extract it. However, in some ,if not many, cases, the corpus contains numerous distinctive types of recursive patterns; If the researcher gathers them all under one umbrella term, analysis, or theme, he will neglect his diversity of the data and fails to account for all the phenomenon happening. That is why it is highly recommended, if not required, by the corpus analysts to create themes, through thematic analysis, as umbrellas that gather the relevant recursive pattern under them accordingly.

2.2.1.2 Deductive fashion for thematic analysis:

A deductive approach for thematic analysis , also called theoretical or top-down approach for thematic analysis, is the opposite of inductive in the way it requires the researcher to conduct his analysis with a pre-determined theory. This approach tends to focus on some specific aspect of the data, mostly the one that suits the theory of the researcher, and neglects others. Thus, this approach gives a less detailed description of the data. The choice between inductive and theoretical is decided on whether the researcher has a specific research question you need to clarify with data (which maps onto the more theoretical approach), or the researcher wants to formulate his research question while actually coding the data (which maps onto the inductive approach).

2.2.1.3 Abductive method for thematic analysis:

Abductive method originates from pragmatism (Peirce, 1974) and involves combination of empirical data and existing theoretical knowledge (Atkinson et al., 2003; Hurley et al., 2012). Thus, it represents a middle ground between the inductive and the deductive method. It adjusts and refines current theories to account for the anomaly of the data.

2.1.1 Types of themes:

The level of themes is also bifurcated into two main categories which are semantic and latent themes, (Boyatzis, 1998).

2.1.1.1 Semantic-level themes:

Within a semantic approach, the themes are identified solely based on participants' words; Thus, the researcher cannot add any interpretation beyond participants' words. In other words, the researcher deals with the surface aspect of participants' answers. Thus, it is simply a descriptive analysis of the data. If we were to compare it to another interactional discipline, it would be conversation analysis since both of them focus on surface patterns rather than implicit ones.

2.1.1.2 Latent-level themes:

Latent approach goes beyond the semantic ground; It deals with the underlying ideas, ideologies, and assumptions. Hence, it requires a huge amount of interpretation from the researcher, so it is more of a theorized analysis of data rather than a mere description as in the semantic level. If we were to compare this to another interactional discipline, it would be "discourse analysis". An interesting fact is that thematic discourse analysis is based on the
latent-level theme. Choosing which type of level of themes depends hugely on the research objectives and the qualitative approach adopted.

2.3 Qualitative data analysis software

In recent years, qualitative research has become more organized and efficient thanks to the development of specialized software known as Qualitative Data Analysis Software (QDAS). These tools help researchers manage, code, and analyze several types of qualitative data, including interviews, documents, and visuals. What makes QDAS important is that it provides a systematic way to work with large volumes of unstructured data, while also making the research process more transparent and consistent (Paulus & Lester, 2021). QDAS is especially useful in TA, which is a common method used to explore patterns and meanings in qualitative data. With features like code organization, memo writing, and data visualization, these tools make it easier for researchers to go deeper into their data and keep track of the steps they take. In more recent versions, some QDAS tools have even started using artificial intelligence to assist with coding and interpretation (Woods et al., 2016). In this research, the focus will be on two of the most commonly used QDAS tools: NVivo and ATLAS.ti. Both are used by researchers from different fields such as education, media, health, and the social sciences. NVivo, created by QSR International, is known for its smooth interface and strong feature especially when it comes to managing data and connecting with external sources like surveys or social media. NVivo 15, the latest version, includes updates that support teamwork, faster coding with AI, and more options for visualizing data (QSR International, 2023). ATLAS.ti, developed by Scientific Software Development GmbH, is also a powerful and flexible software. It manages a wide variety of data types like audio, video, and images, and is known for its advanced visual tools. The 2025 version of ATLAS.ti brings in several AI-based features like automatic coding, sentiment analysis, and a conversational AI that allows users to ask questions directly to their dataset (ATLAS.ti, 2024; Friese, 2019).
Because both NVivo 15 and ATLAS.ti 2025 offer advanced features for thematic analysis, this research will compare the two to explore how they support researchers, and which one might be more effective for several types of qualitative work.

3. Methodology

3.1 Research objectives

This research examines a key aspect of qualitative research which is software-assisted thematic analysis. It explores how two programs, NVivo 15 and ATLAS.ti 2025, assist researchers in organizing and analyzing qualitative data. The main purpose of this study is to gain a clear image of the programs' features, to understand how they support the analytical process as well as to determine which software is more effective. First, in this research, we examine the strengths and limitation of each software, focusing on accessibility, coding, collaborative, and summarizing abilities. Then, based on those features, we aim to provide recommendations for researchers on which software may be the better choice depending on their needs.

3.2 Research questions:

RQ_1: What are the key features of NVivo 15 and ATLAS.ti 2025?
RQ_2: Which one of the two programs is better for qualitative data analysis?

3.3 Instruments

Our research operates within two main methods which are content analysis and thematic analysis. Content analysis incorporates different varieties of approaches by Merten (as cited by Titscher, Meyer, Wodak, & Vetter, 2000). It consists of analysing
Texts and media(videos, images, audios). However, although all content-analysis approaches stem from content analysis theory, they differ in two main aspects which are the research goals and the way of analysing data. Therefore, the way you choose the approach within content analysis depends on the two aspects mentioned before. In our case, we are going to analyse videos of PhD holders and tech-experts on YouTube. We choose tutorial videos where several features of the programs are displayed effectively; All those videos were neutrally showing features of the program; That is why we can say we dispose of natural and reliable data. Moreover, YouTube videos about technology are considered more effective and clearer than papers and are rich, fruitful, and straightforward in their explanation.

3.4 Data organization and analysis

3.4.1 Data collection and organization

First, we collected a considerable number of lengthy videos about both programs submitted by PhD holders and tech-experts; We collected 5 videos in which information is exhibited in the table below.

Table 1: *information about the data*

The video's title	Length	The software discussed	The author of the video
Session 03 Qualitative Data Analysis using ATLAS.ti Thematic, Content, Sentiment, Network, & AI data	2 hours and 7 minutes	ATLAS.ti 25	Dr Ambati Nageswara Rao
NVivo – AI features in the new NVivo 15	48 minutes	NVivo 15	Alfasoft.com
AI-Powered Qualitative Analysis: NVivo 15 Tutorial for Researchers	14 minutes	NVivo 15	Philip Adu, PhD
ATLAS.ti 25 #transcripción de audios con IA #CAQDAS	6 minutes	ATLAS.ti 25	Juanjo Boté

We, then proceeded to transcribe them by using the YouTube transcription extension. Our next step was to summarise the features and their benefits.

3.4.2 Data analysis through thematic analysis

After successfully completing the first steps, we formed themes based on the commonality, relevancy, and recurrence of the features. We formulated 5 themes which are security, affordance, collaborative work, coding, and summarising. Our final step was to decide which program excels in which themes. We will represent all what we found in the next section.

4. Results and Discussion

We grouped our findings into a table based on their commonality. After our analysis, we created a figure in which all the themes are present and showed which software excels in which theme.

Table 2: *Comparing coding abilities: coding, focus group, and themes generating abilities*

Features / Programs	Focus group	Coding and themes generating abilities
ATLAS.ti 25	You organize your participants' information according to your fixed characteristics and patterns desired. The main advantage is its ease of usage and the width of choice of patterns (Nageswara Rao, 2025).	It transcribes oral and written files in 30 languages (Boté,2025). Form a cloud concept with the most repeated concept (Search text, Word Cloud, Open mining, Concept, Maps.) Convert the themes and codes to graphs. AI can provide you with codes related to your thesis. Split codes for the avoidance of redundancy and more specification. It allows content, networks, and sentiment analysis. It has the feature of Named Entity Recognition (NER) (Nageswara Rao, 2025)
NVivo 15	NVivo can provide codes for the focus group interview in the section case. It is well-organized, and you can not only organize your participants' information, but also the places relevant to your study. (such as the environment in which the experiment was conducted.) (Alfasoft,2025).	It develops themes to address and illustrate your research question. It can analyse a huge number of references within the containers and provide you with codes. However, the researcher needs to create those containers (Adu, 2025). It displays the codes with the significant information and the references used to form them. It deletes undesired codes. It deletes undesired information within codes while preserving the code. It does not allow for an organized variety of code presentation unlike Atlas.ti.25. AI can suggest codes for you. It allows relationship and sentiment analysis. (Alfasoft, 2025) It transcribes audio and video files to text documents in 43 languages (Alfasoft, 2025) and (NVivo 15 website).

Table3: Comparing security, price, and summarizing:

Features / Programs	Security	Pricing	Summarizing Abilities
NVivo 15	It gives your data to a third party. It protects your data. It does not give it to a trained AI model to use it as a training database (Adu, 2025).	The students' annual prices are as follows: NVivo, with an extremely limited AI assistant, costs 120 USD whereas if it has the developed AI, it costs 360 USD. (NVivo 15 website)	It summarizes different ranges of length which are short, medium, and long (Adu, 2025). You can translate it into 43 languages. You can summarize the whole document or a part of it. (Alfasoft, 2025).
ATLAS.ti 25	Regarding data-sharing with third parties, the privacy policy indicates that personal data may be shared with contractors, service providers, and other vendors who assist or support ATLAS.ti in providing their services. These third parties are bound by	One year price is 90 USD meanwhile the monthly price of the web version is 10 USD. 6 months cost 50 USD. (Atlas.ti25 website.)	You can translate to more than 30 languages but less than 40. You cannot specify the length of the summary. You have the ability to chat to an IA robot. (Nageswara Rao,2025)

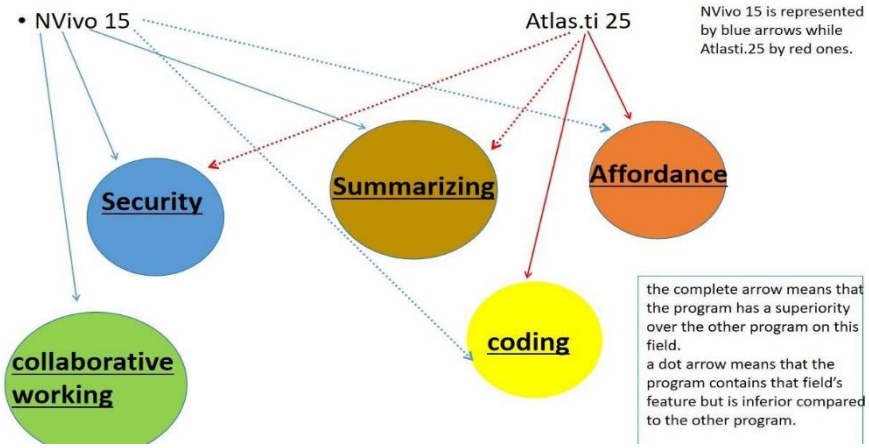
	agreements that restrict them from using the personal data beyond the purposes of providing services to ATLAS.ti. (Nageswara Rao, 2025)		

NVivo 15 has an additional feature, which ATLAS.ti 25 has not, which is collaborative work; It allows many persons to work on the same project simultaneously " if you want to work in a team this is of course also possible; we have a new version of the NVivo collaboration Cloud, so the NVivo collaboration cloud is an add-on module that allows you to work together in one project file in real time even across platforms.

4.1 Thematic analysis:

After considering the two tables above, we can conclude that NVivo 15 promises more security and provides more features for summarizing. It also allows collaborative work on its platform, which ATLAS.ti 25 does not. However, its high price and narrow purchasing options make it less accessible than ATLAS.ti 25. Moreover, the latter exhibits slightly more powerful and diverse coding and graphic abilities than NVivo 15. These results are clearly summarized in the following figure.

Figure 2. *Final comparison between the programs by using thematic analysis*



4.1 The conclusion of the analysis

The two previous subsections answer our two research questions which are:
RQ_1: What are the key features of NVivo 15 and ATLAS.ti 2025?
RQ_2: Which one of the two programs is better for qualitative data analysis?

First, the two programs share a wide array of features, but in each feature, a program is better. ATLAS.ti 25 has the upper hand in coding-related features and the accessibility while NVivo 15 is better in security and summarizing-related features. NVivo has another asset which is its allowance for collaborative working. Second, we can, then, surely argue that if the researcher needs to work with his teammates, needs to extremely reduce the spread of his data , or/and wants to summarise intensively, the best option is NVivo. However, if the researcher wants a more affordable software with high ability in coding, Atlas ti.25 is the most suitable.

5. Conclusion

This study aimed to compare two leading qualitative data analysis tools, NVivo 15 and ATLAS.ti 25, through a thematic analysis lens. By analyzing expert tutorials using content and thematic analysis methods, we identified five major themes: coding abilities, affordance, collaborative work, security, and summarizing. These themes were used to evaluate and compare how each software performs in various aspects of qualitative analysis.

The findings show that NVivo 15 excels in collaborative work, security, and summarizing, making it particularly suitable for researchers working in teams or handling sensitive data. Its ability to translate summaries into over 40 languages and generate summaries of different lengths is a clear advantage. Meanwhile, ATLAS.ti 25 stood out in coding and graphic representation features, offering advanced tools like word clouds, concept maps, and Named Entity Recognition (Friese, 2019; ATLAS.ti, 2024).

Considering the pricing models, ATLAS.ti is the more affordable option, while NVivo offers a more robust set of features—albeit at a higher cost (QSR International, 2023). Based on the thematic analysis, it can be concluded that NVivo 15 is ideal for team-based, security-conscious projects, while ATLAS.ti 25 is better suited for individual researchers seeking strong coding tools at a lower price. Each tool has its advantages, and the final choice should depend on the research goals, available resources, and project priorities.

Funding: This research received no external funding.
Conflicts of Interest: The authors declare no conflict of interest.

References

[1] Adu,P.(2024). AI-Powered Qualitative Analysis: NVivo 15 Tutorial for Researchers. YouTube.

[2] Alhojailan.M.I.(2012). Thematic analysis: a critical review of its process and evaluation.

[3] Alfasoft.com.(2024). NVivo – AI features in the new NVivo 15.Youtube.

[4] ATLAS.ti. (2024). ATLAS.ti 2025 features overview [Software documentation].

[5] Bote,J.(2025).ATLAS.ti 25 #transcripción de audios con IA #CAQDAS. YouTube.

[6] Friese, S. (2019). Qualitative data analysis with ATLAS.ti (3rd ed.). SAGE Publications.

[7] Graue, C. (2015). QUALITATIVE DATA ANALYSIS. *International Journal of Sales, Retailing & Marketing*, *4*(9).

[8] Jacelon, C. S., & O'Dell, K. K. (2005). Analyzing qualitative data. Urologic nursing, *25*(3), 217-220.

[9] March,E.E & White.M.D.(2006). Content Analysis: A Flexible Methodology. Research gate.

[10] Namey,E.E & Macqueen,K.M & Grest,G.(2012). *Introduction to applied thematic analysis.*

[11] NVivo 15. https://lumivero.com/products/nvivo/. NVivo website.

[12] Patton,M.Q.(1990). *Qualitative Evaluation and Research Methods.*

[13] Paulus, T. M., & Lester, J. N. (2021). Doing qualitative research in a digital world. SAGE Publications. QSR International. (2023). NVivo 15 release notes and user guide.

[14] Rao,A.G. (2025). Session 03 Qualitative Data Analysis using ATLAS.ti Thematic, Content, Sentiment, Network, & AI data. YouTube

[15] Richard E. Boyatzis "Transforming Qualitative Information: Thematic Analysis and Code Development" in 1998.

[16] Silver, C., & Lewins, A. (2014). Using software in qualitative research: A step-by-step guide (2nd ed.). SAGE Publications.

[17] Woods, M., Paulus, T., Atkins, D. P., & Macklin, R. (2016). Advancing qualitative research using qualitative data analysis software (QDAS)? Reviewing potential versus practice in published studies using ATLAS.ti and NVivo, 1994–2013. Social Science Computer Review, 34(5), 597–617.