Using Qualitative Data Analysis Software (QDAS) in Communication Studies: A Systematic Review

Nitel Veri Analiz Yazılımlarının İletişim Çalışmalarında Kullanımı: Sistematik Bir Analiz

Esra TANİ-YILDIZ[1][2]

Mehmet Sinan TAM[3]

Abstract

This paper aims to explore how qualitative data analysis programs are used by Turkish researchers in communication studies and the value software programs add to the research. Studies included in this systematic review were gathered from DergiPark, Web of Science Core Collection, and Scopus scientific databases. A total of 120 studies were identified. It has been determined that only MAXQDA, NVivo, and Atlas.ti programs are preferred in media and communication studies published by Turkish academics. According to the findings of the study, Turkish communication researchers benefiting from QDAS programs primarily target nationally indexed journals rather than internationally indexed ESCI and SSCI journals. A significantly large proportion of reviewed articles do not use a well-articulated methodology for the analysis process. Reliability and validity were ignored in almost half of the sample. QDAS programs are used for reasons such as facilitating data management, data visualization, and working on different data sets. A notable observation made in this study was that programs are mostly used in the social media field. Universities should provide opportunities for graduate students and academic staff to spread QDAS programs, it was suggested in the research.

Keywords: *Communication studies, Qualitative software, QDA/QDAS/CAQDAS, MAXQDA, NVivo, Atlas.ti.*

Öz

Bu makale, iletişim çalışmalarında nitel veri analiz programlarının Türk araştırmacılar tarafından nasıl kullanıldığı ve araştırmaya kattığı değeri keşfetmeyi amaçlamaktadır. Bu sistematik analize dahil edilen çalışmalar DergiPark, Web of Science Core Collection ve Scopus bilimsel veri tabanlarından toplanmıştır. Toplam 120 çalışma belirlenmiştir. Türk akademisyenler tarafından yayınlanan medya ve iletişim çalışmalarında yalnızca MAXQDA, NVivo ve Atlas.ti programlarının tercih edildiği belirlenmiştir. Araştırma sonucunda QDAS programlarından yararlanan Türk iletişim araştırmacılarının, uluslararası indeksli ESCI ve SSCI dergileri yerine, daha çok ulusal indeksli dergileri hedefledikleri tespit edilmiştir. İncelenen makalelerin büyük bir kısmının analiz sürecinde şeffaf bir metodoloji kullanmadığı anlaşılmıştır. Örneklemin yarısında güvenilirlik ve geçerlilik göz ardı edilmiştir. Araştırmacıların veri yönetimini kolaylaştırma, veri görselleştirme ve aynı anda farklı veri setleri üzerinde çalışabilme gibi nedenlerle QDAS programlarını kullandığı belirlenmiştir. Bu çalışmada dikkat çeken bir başka gözlem ise nitel veri yazılımlarının daha çok sosyal medya alanında kullanılmasıdır. Araştırmada üniversitelerin QDAS programlarının yaygınlaştırılması adına gerek akademik personel gerekse lisansüstü öğrencilerine olanaklar sunması önerilmiştir.

Anahtar Kelimeler: *İletişim çalışmaları, Nitel yazılım, QDA/QDAS/CAQDAS, MAXQDA, NVivo, Atlas.ti.*

---

[1] Asst. Prof. Dr., Bandırma Onyedi Eylul University, Faculty of Applied Sciences, Department of New Media and Communication, etani@bandirma.edu.tr, ORCID: 0000-0002-4427-325X

[2] Corresponding Author (Sorumlu Yazar)

[3] Asst. Prof. Dr., Bandırma Onyedi Eylul University, Faculty of Applied Sciences, Department of Public Relations and Advertising, mtam@bandirma.edu.tr, ORCID: 0000-0001-9897-0803

Introduction

Communication studies, like many other fields in the social sciences, have two main approaches. The techniques used in these approaches are categorized as either quantitative or qualitative. Numerous statistical tools, particularly software like SPSS, R, AMOS, and LISREL, are available especially for quantitative analyses. Software programs referred to as CAQDAS (Computer-assisted qualitative data analysis software), QDA (Qualitative Data Analysis), or QDAS (Qualitative Data Analysis Software) have become increasingly popular in qualitative studies in recent years. These programs are most frequently used by researchers to support analyses of data gathered through interviews, focus groups, documents, field notes, and open-ended survey questions. Researchers use QDAS to support a variety of research designs (Woods et al., 2016). The software programs are also used in mixed-method designs.

Before the advent of QDAS, Excel or SPSS were used for conducting qualitative studies, particularly those employing the content analysis method. These software programs merely assist the user in identifying variations or connections between frequency and variables. However, QDAS offers researchers additional features beyond these basic functionalities. It enables the creation of word clouds, design of models, data retrieval, and automated coding based on phrases. This has significantly enhanced convenience. Except for the QDAS interfaces, almost most of its aspects are prepared with the same logic. Instead of the user's prior knowledge and experience with the program, the efficiency offered by these programs to the researcher is limited by the researcher's ability to use analysis knowledge (Oliveira et al., 2013).

Because qualitative data analysis software has gained popularity, researchers are increasingly interested in using various software tools (Woods et al., 2016). However, epistemological discussions related to the use of qualitative software programs have been in social science for quite a long time. In the early 1990s, there were researchers concerned about the use of computer software in qualitative research. Some researchers questioned the use of such tools and stated that computer software could manipulate the research and the researcher (Morison & Moir, 1998). One of the main concerns is that researchers could design and tailor their data according to the needs of their projects (Woods et al., 2016). Additionally, the software may distance the researcher from the data and impose some rigid outlines on the analytic process (Bourdon, 2002). Despite all these concerns, as of the 2020s, the use of qualitative data analysis software (QDAS) has become a necessity, leaving no room for doubt. In the last two decades, the important development of computer programs has supported the researcher in carrying out the analysis process (Peters & Wester, 2007).

The well-known QDA programs can be listed as MAXQDA, NVivo, and Atlas.ti, Dedoosei, Elan, F4 analyse, HyperRESEARCH, QDA Minerx, Quirkos and Transana (Paulus & Lester, 2020). However, the frequency of preference for these programs varies according to disciplines, countries, and years. Hoover & Koerber (2011) highly point out that software called NVivo, Atlas.ti, and MAXQDA are the three predominant brands of QDAS that are available, although alternatives do exist. It is clear from the literature review and the review of studies in Web of Science (WoS) that a similar trend is observed in communication studies as well.

The number of studies using QDAS in the field of communication is increasing in the national (Basev, 2022) and international literature (Hille & Bakker, 2014; Lempp & Testa, 2022; A. P. B. Oliveira & Angeluci, 2019). However, the practicality of QDAS for the communication field has not been sufficiently discussed. Although there are studies that provide guidance on how to use QDAS (Hoover & Koerber, 2011; Lewins & Silver, 2007) it has not been specifically examined how communication professionals approach and benefit from these software programs. The study's main contribution in this context has been to clarify how QDAS programs are applied in the field of the communication discipline.

It was observed that some questions remained unanswered; which sub-branches of communication sciences prefer these programs? Do researchers use QDAS when extracting data from media or analyzing media content? This study aims to find answers to these questions and to contribute methodically to the field. The innovations that QDAS programs have brought to the field as well as their advantages and drawbacks are discussed in the theoretical portion of the study. The studies pertaining to the communication discipline in DergiPark, Web of Science, and Scopus were analyzed within the parameters of the research questions during the application phase.

1. Utilizing Qualitative Data Analysis Software in the Discipline of Communication

Scholars of communication are always interested in knowing research trends, including which methods are used most in their areas (Kamhawi & Weaver, 2003). Communication scholars mostly prefer qualitative research designs (Croucher & Cronn-Mills, 2014; Lombard et al., 2002). Schreier (2014) specifically points out that

the communication field has a crucial role in the origin of qualitative research. According to Schreier, during the first half of the twentieth century, qualitative research developed in the context of mass media, the social effects of media, and propaganda as governmental communication. Qualitative research has been steadily advancing ever since. In recent years, the use of computer software in qualitative analysis has been an increasing trend (Sánchez-Gómez et al., 2019; O'Kane, 2020; Karcher et al., 2021; Niedbalski & Ślęzak, 2022). Communication scholars also benefit from methodological trends for their field studies. Media and communication field use QDAS to analyse interview transcripts, blog or web pages, social media posts, images (e.g., magazine or billboard ads, political caricature), audio and video (e.g., television news), media content, surveys, articles (Allen, 2017; Marjaei et al., 2019). In terms of media studies, the programs are quite useful in framing cases or events. It provides crucial tools for the researcher to examine the speech and discourse in media content (Leimbigler, 2021).

The grammatical structure of language is the basis for qualitative research in the field of communication. Interpretive and critical approaches to the language influenced the qualitative methods. These methods are ethnography, discourse, and content analysis (Lewins & Silver, 2007). At the same time, masterpieces of the hymn and literature field have undoubtedly influenced the shaping of these three methods of communication science (Jensen, 2002).

QDAS programs such as MAXQDA and NVivo are ideal for the content analysis method, which is commonly used in communication studies (Lombard et al., 2002). However, the software does not provide communication researchers with a

methodological or analytic framework (Lewins & Silver, 2007). For example, it is not possible to obtain results by only introducing the data extracted from social media to NVivo, MAXQDA, or other computer-assisted programs. Quick and automatic analysis cannot be performed with commands such as run or start into these programs. Researchers who are in the field of communication or other need to perform a series of operations on these programs to extract meaningful and useful information from the data set. Humble (2012) points out that the program does not do analysis in the name of any researcher, and automated aspects of the programs should be approached with suspicion.

Using QDAS allows patterns to emerge from large-scale textual data, transcription, and field notes that are sometimes impossible to reveal manually. News, social media data, scenes from movies, or discourses in political communication usually consist of quite large texts or images. QDAS creates an extraordinary opportunity for communication scholars to collect, clean, integrate, and analyze this type of data. These powerful tools enable large volumes of data to be processed more efficiently with less effort (Allen, 2017). It is important for communication researchers to become aware of the possibilities of using qualitative software (Zamawe, 2015).

As datasets are increasingly larger and messy in the communication field, QDAS also offers researchers a much more manageable analysis process (Allen, 2017). The software programs allow for exploring emerging ideas and testing questions and theories more quickly and safely (Richards & Richards, 1991). However, it needs to be pointed out that although the software accelerates the progress of a project, the data mining phase is still quite intensive,

dedicated, and time-consuming (Holbrook & Butcher, 1996). A single step of the analytical process is not possible, but after all, periods last much shorter than manual means.

In communication research, the relevant data set, which could be written, visual, or audio is encoded in QDAS programs. If encoded data is text, it can be encoded more quickly with advanced options in MAXQDA or NVivo. Although audio and image have a remarkable place in communication studies, it can be argued that these programs are better suited for written content retrieving from websites, Twitter, and YouTube than for video and visual content. It is still possible to work on audio, video, or image, but resources are limited.

Because of the nature of qualitative research, generalization of findings is avoided, unlike qualitative and statistical methods. However, a qualitative examination is appropriate to narrow the focus and identify the latent variables underlying a phenomenon (Neuman, 2014). Communication studies also avoid generalizing research results because they focus on social issues, the effects of mass media, or the perception of media messages. Therefore, these subjects are not eligible for quantitative methods such as surveys, where results are generalized. The survey is not enough for in-depth research because it collects data within a predetermined questionnaire. Therefore, techniques such as interviews, case analyses, and discourse analyses are preferred more than questionnaires for the communication discipline.

Because QDAS could provide more transparent analytical processes (Jakobsen & McLaughlin, 2004; Woods et al., 2016), it became easier to ensure validity and trustworthiness. The fundamental innovations brought about by QDAS

software in the field of communication, and thus in academia, can be classified into five categories.

Efficiency: Using QDAS software can significantly reduce the costs, time, and effort associated with manual coding, particularly in content analysis. Interviews used to be manually transcribed, but with MAXQDA, NVivo, or Atlas.ti, audio or video recordings of interviews can be added to the system without being transcribed (Chimeva, 2022). Thus, the software eliminates the time needed for deciphering. The software also makes it simple for researchers to add notes to subcodes and transfer the codes of all coded data to them (García-Horta & Guerra-Ramos, 2009). Traditionally, studying social media data has taken a long time. However, data from the Twitter and YouTube platforms can be instantly obtained with the QDAS programs. Additionally, coded data with an Excel extension can be taken and transferred to SPSS to conduct an analysis.

Diversity: In semiotic studies, related photos or videos can be imported into programs, and both can be analyzed. Focus groups, interviews, etc., can define conversations in written and audio forms. As a result, the research's data set can become more diverse. The simultaneous use of multiple methods is made possible by the QDAS software. For instance, a semiotic study can combine content analysis and discourse analysis techniques. Therefore, it can be said that diversity is one of the most fundamental benefits that it provides to researchers. The aforementioned diversity can be explained using the following terms: data set, sample, codes, themes, analysis, and method. Social media data's aspect of sharing can be automatically coded. In communication studies, sampling is unquestionably one of the most crucial methodological issues.

This software also offers the researcher a variety of sample sizes, which is an advantage (Cypress, 2019).

Transparency: Another researcher can view the entire dataset, code, and themes encoded by the researcher. The Kappa test can be used to gauge the dependability of data encoded using the compatibility menu between coders. Since encoding to another encoder is the only way to provide data reliability in the traditional sense, the QDAS also allows for statistical analysis of this process.

Theory/Model Generation: The QDAS is not only for data analysis but also allows the user to visualize a theory with the model features it offers to the researcher (Çayır & Sarıtaş, 2017). This feature, which enables the researcher to innovate the theory, is particularly supported by theoretical studies in the field of communication.

The use of QDAS in academic writing has two significant drawbacks in addition to all these benefits. These are data manipulation issues and technical shortcomings.

Data Manipulation: To a certain extent, the QDAS can prevent data manipulation (García-Horta & Guerra-Ramos, 2009). However, the researchers' obsession with codes or the notion of coding everything in this software undermines the internal validity of the research (Marshall, 2002). The opposite of this circumstance results in data manipulation. On the other hand, it automatically encodes this data by sifting through irrelevant and meaningless tweets or comments, which can lead to data manipulation. The software's inability to automatically encode almost all content, except for a few titles, in social media data is its biggest drawback. A significant time efficiency burden is also placed on the researcher by this circumstance. The researcher may purposefully manipulate data while the data are being coded.

Technical Restrictions or Deficiencies: The most glaring shortcoming of QDAS software is that it is unable to receive data from all social media platforms and that the data it does receive is only valid for a limited amount of time. For instance, you can only access content that was shared on Twitter up to one week ago. It has a 10,000-tweet limit and does not automatically receive the video and photo content shared here. The maximum number of comments that can be made on YouTube content is 10,000. The wide use of QDAS software is restricted by the fact that it is a paid product. Additionally, there are some restrictions on the analysis performed in the QDAS software's menus. As an illustration, the MAXQDA-created two-case model displays up to 20 codes. Additionally, the program's models under the MaxMap tab do not have font sizes, line widths, or satisfactory readability resolutions.

2. Aim and Methodology

2.1. Aim

The main purpose of the study is to explore how qualitative software programs are used and what they are used for by the academic communication community in Turkey. Little is known about how communication researchers' experiences differ and how they benefit from QDAS. Data collection, data management, coding, and reporting experiences through QDAS may differ. For this reason, scholars may encounter various issues. We conducted this review to fill a critical gap. Although there are technical books (Dereli, 2023; Güven & Tekindal, 2022; Sağlam & Kanadlı, 2019) in the Turkish literature that explain how to use the software, it is unclear whether the software make a methodologically meaningful contribution to research and what kind of data they enable to work with in communication

studies. Since this study examines all existing studies in the Turkish communication literature, it will be able to present the general and current situation in detail. It can serve as a guide for researchers who are working with or planning to work with the software. Because both authors have their own experiences of using such programs, it is considered that it could provide a significant benefit in making the determinations.

The following questions were attempted to be answered within the framework of this fundamental query.

RQ1: What is the relationship between the variables in the communication studies in DergiPark, WoS, and Scopus?

RQ2: Are there any diverging and similar aspects in terms of analysis in studies conducted in the MAXQDA, NVivo, and Atlas.ti programs?

RQ3: Do the reviewed articles use a transparent and well-articulated methodology?

2.2. Research Design

Due to the nature of the research questions and the intention of the study, a qualitative approach was adopted. This study conducted a systematic review of 120 empirical studies. A systematic review differs from a traditional literature review by, as far as possible, generating a comprehensive picture of the current state of knowledge, paying careful attention to the quality of included studies, and taking a systematic and transparent approach to the synthesis of the data (Victor, 2008; Volk, 2016). It focuses on research that reports data rather than concepts or theories. More clearly, it centers on the methodological segment of the research. A systematic review consists of clear objectives and questions, inclusion and exclusion criteria, a comprehensive search

to identify all appropriate studies, and a protocol to determine the eligibility of studies (Aromataris & Pearson, 2014). The technique used in this study was based on the protocol of Aromataris & Pearson (2014), Hossler & Scalese-Love (1989), and Ke (2009).

2.3. Search Methods

The publication pool was created by searching the electronic databases Web of Science, Scopus, and DergiPark. Since DergiPark hosts Turkish journals of social science, it plays a critical role in taking a more comprehensive scan of Turkish communication literature. All three databases oblige publishers to comply with some criteria to improve the quality of articles, such as the blind peer review system and the transparent publishing process. Therefore, the quality of the articles in the data pool maintains certain standards.
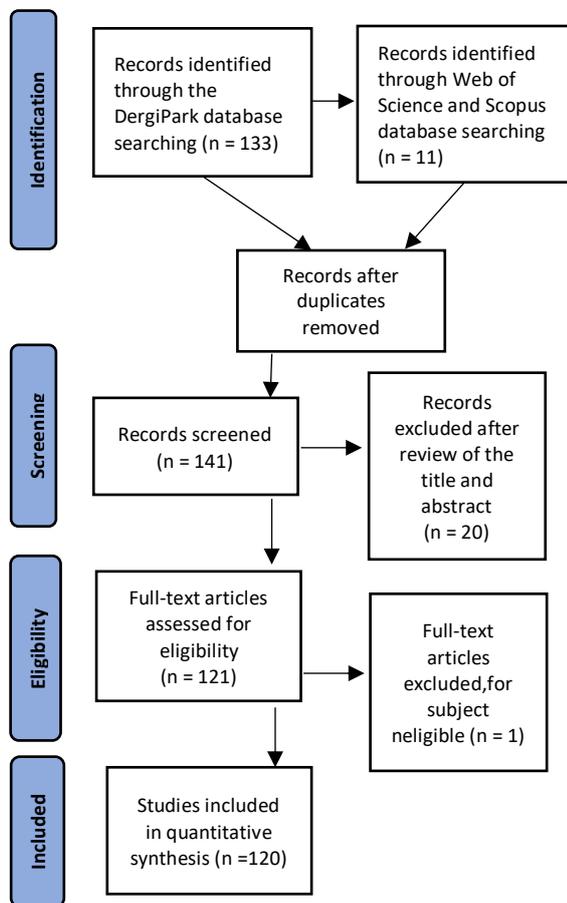
Figure 1. Systematic Review Diagram of This Study (Moher et al., 2009)

2.4. Inclusion Criteria

For a comprehensive search, it is not limited to journals in the field of communication, but all journals in the field of social sciences are included. The studies included in this systematic review are publicly available literature. While obtaining published studies, the search had all types of publications (e.g., articles, reviews, conference papers) with no limitation of date span.

We included publications that met the following set of criteria: (1) written in Turkish or English language, (2) dedicated to the broad field of communication (journalism, cinema, public relations, advertising, media studies, and marketing comm), (3) studies that used QDAS, and 4) written by Turkish academics. We excluded publications that did not meet the four criteria listed above.

The search strategy depended on critical/key terms which were determined by considering (Paulus & Lester, 2020). To ensure higher sensitivity, the phrases were scanned electronically in titles, abstracts, and keywords. Search terms comprised "QDAS", "QDAS programs", "Qualitative software programs", "MAXQDA", "NVivo", "Atlas.ti", "QCA", "Orbis", "Tabletop", "HyperRESEARCH", "Transana", "QDAMiner" and "Leximancer".

2.5. Sample

In this study, all the programs listed by Paulus & Lester (2020) were searched and indexed as keywords in DergiPark, Web of Science, and Scopus. According to the detailed scan, it was determined that MAXQDA, NVivo, and Atlas.ti were applied

in communication-related articles written by Turkish scholars. For this reason, MAXQDA, NVivo, and Atlas.ti are the research samples of the study. This result is consistent with the literature, which highlights MAXQDA, NVivo, and Atlas.ti as the three leading, most preferred, and longest-used software programs (Cypress, 2019; Hoover & Koerber, 2011; Humble, 2012; Lewins & Silver, 2007). All three programs have similar features and tools in common, but they also have a few distinctive features that are partly unique to them (Peters & Wester, 2007).

It should be noted that the number of studies excluded in this study is larger than the number of the sample. Therefore, inferences are limited to the data examined.

2.6. Data Coding and Analysis

All data were coded in the MAXQDA 2020 program by two different coders from the communication field. The coding process involved more than one coder for more consistent and valid results. While determining the themes and categories, there was some consensus and disagreement, but the final decision was made with discussion. The dataset was split into two parts, and coders were coded for the different blocks of data. After the coding process was completed separately, the entire coding process was mutually rechecked to ensure reliability. According to Miles et al. (1994) between-coder agreements for higher initial code-recode reliability should be closer to 80%. In this study, internal consistency is up to 97%.

3. Findings

RQ1: What is the relationship between the variables in the communication studies in DergiPark, WoS, and Scopus?
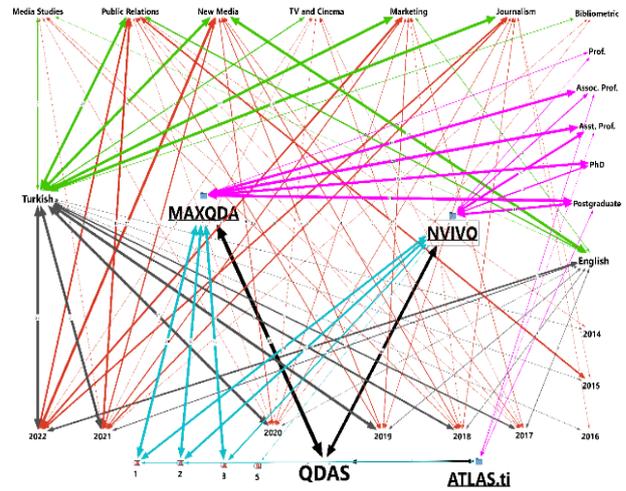

Figure 2. The Intensity of the Relationship between the Prominent Variables in the Programs Used.

Communication articles that have used QDAS programs methodologically in the last 10 years are predominantly in Turkish. While 96 studies are in Turkish, only 21 are in English. A total of seven research topics have been identified, and the coding on these topics varies according to the year, language, and software program. Excluding the two bibliometric studies written, Turkish articles were written on new media (23), marketing (24), public relations (22), journalism (21), TV Cinema (5), and media studies (4). English articles are limited only to the field of new media (10), public relations (6), marketing (2), and media studies (1). While both MAXQDA and NVivo are most used in new media and public relations topics, Atlas.ti has only been used in journalism and marketing topics. Researchers benefited only from NVivo in research on media studies (5).

While the first study suitable for the scope of this research was found in 2014, a different rate of articles continued to be published every year until 2022. The fact that the first articles belong to after 2010 indicates that the programs are still being discovered in Turkish media and communication literature. There has been a clear and visible increase in the number of publications since 2020. On a yearly

basis, the most obvious increase is in the MAXQDA program. Compared to NVivo and Atlas.ti, MAXQDA is most preferred by Turkish communication researchers.

While 71 articles were published in journals scanned with TR Index, nine articles were published in ESCI or Scopus Indexes, and only two were in SSCI journals. 29 articles were published in journals scanned with Copernicus, EBSCO, DOAJ, etc., which are called other international indexes that are not influential as ESCI and SSCI for the international visibility of an article. The remaining nine studies were published in journals that were not indexed.

In program usage preference according to academic titles, the highest title seems to have made the least number of publications. Articles with Prof. title use both MAXQDA (2) and NVivo (2), but no publications were found with Atlas.ti. In other titles, the order is as follows; Assoc. Prof. MAXQDA (14) and NVivo (5), Atlas.ti (2); Asst. Prof. MAXQDA (21) and NVivo (16), Atlas.ti (1); PhD MAXQDA (12) and NVivo (6); Postgraduate MAXQDA (22) and NVivo (14), Atlas.ti (2). The number of authors varies between one, two, or three, except for a study with 5 authors. 46 articles were written with a single author, 55 articles were written with two authors, and 18 articles were written with three authors. Thus, it can be said that most of the articles examined were created through teamwork.

RQ2: Are there any diverging and similar aspects in terms of analysis in studies conducted in the MAXQDA, NVivo, and Atlas.ti programs?
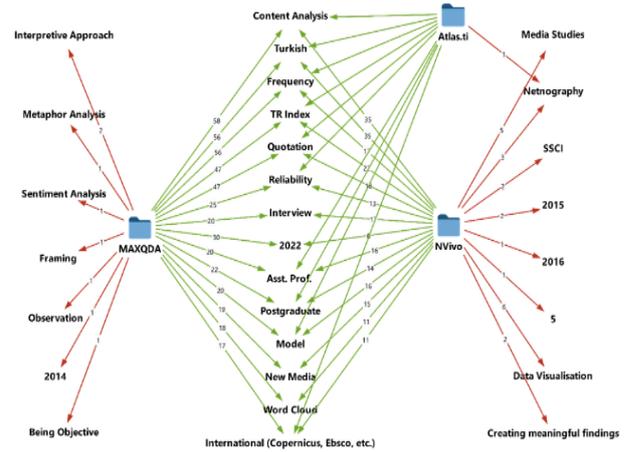

Figure 3. The Main Difference and Similarities between the Software

When the key differences and similarities between the programs are compared, it becomes clear that the researchers utilizing MAXQDA employ different study methodologies than those using the other two systems. The MAXQDA program was found to be the program of choice by the researchers for the use of an interpretive approach, framing, metaphor, and sentiment analysis, whereas Atlas.ti and NVivo were favored for netnography studies. They added that the MAXQDA application is used by researchers to maintain objectivity. When we examine the comparable points, we can see that, Atlas.ti is not often used by Turkish researchers. Because Atlas.ti articles are very limited in this systematic review, no unique feature was identified compared to the other two programs. Instead, MAXQDA and NVivo are commonly prioritized, and in this case, the MAXQDA program is one click ahead in terms of the number of studies conducted as well as similar codes.

RQ3: Do the reviewed articles use a transparent and well-articulated methodology?
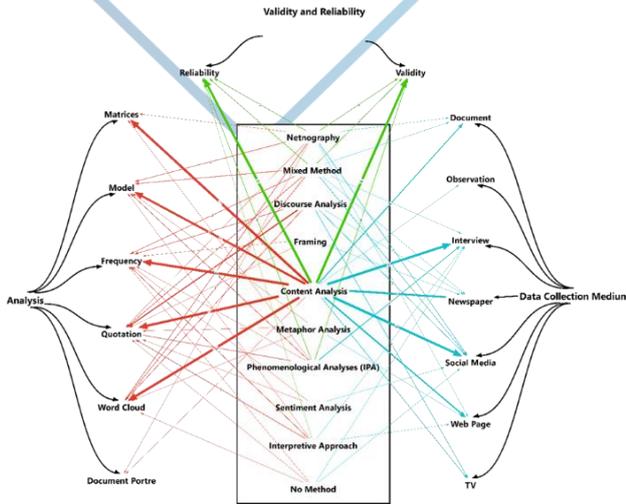
Figure 4. Analysis, Data Collection and Validity and Reliability According to the Methodology Used.

It was determined that ten different methods were used in research articles. Among these methods, content analysis (96) is clearly the most used method. It is followed by mixed methods (6), discourse analysis (6), phenomenological analysis (4), and netnography (4). Metaphor analysis, sentiment analysis, interpretive approach, and framing are not as much used in communication research together with QDAS programs. In two studies, no statements describing the method of the research were found. The data is mostly collected from social media platforms (34), interviews (32), newspapers (16), and web pages (9). New media is on the frontline as a research topic and data collection medium. TV, document, and observation are data collection fields that are rarely used with QDAS programs in Turkish communication literature.

The most used analysis technique is the frequency analysis (76). Except for netnography and metaphor analysis, all methods have benefited from the frequency technique. Secondly, the quotation technique (69) was preferred. The quotation is a technique that researchers often use in qualitative data analysis. Thirdly, the model technique (37)

was preferred. Models are a kind of simplified figures or tables in which related themes are brought together. Fourth, the word cloud (29) formed from the concepts was preferred. Fifth, matrices (17) were created in some studies. Matrices express complex relationships that connect information that is revealed or newly discovered with the help of coding in QDAS programs. The least used technique was the document portrait, which was found in only two studies. This technique can only be created with MAXQDA.

Not every article contains both reliability and validity at the same time. In studies using discourse analysis, framing, metaphor analysis, and sentiment analysis methods, no information, expression, or calculation was found regarding reliability and validity. Reliability was observed in 33 of the studies using the content analysis method, and validity in 16 of them. Only 15 of 120 studies ensured both validity and reliability.

Twenty-one communication researchers stated that they used qualitative software to analyze data. This was followed by the methodological compatibility of the program's own work (9) and the easy management of data (9). Users also stated that they appreciated the practicality of the program (7), its ability to visualize data (6), its ability to study multiple data sets at the same time (4), the reliability of the data (4), obtaining meaningful findings (2), and being objective (1).

Discussion and Conclusion

This paper aims to examine how qualitative data analysis programs are used by Turkish researchers in communication studies. The research attempts to close a significant gap in this regard. Although the use of QDAS program in communication research has increased significantly, the reasons for this

increase have not been studied in a local context. For those who have no idea what QDAS software is and how it is used in communication studies, this research can also be a guide. In summary, it can be said that the most important gap that the study brings to the communication literature is to provide a data set about the local use of the NVivo, MAXQDA and Atlas.ti to researchers interested in the subject and to raise awareness about the use of software in the field of communication.

Although there are more than twenty software programs in the sector, as a result of this study, it was determined that the academic community in Turkey tended towards only three programs. The reasons for this situation can be listed as follows; The lack of Turkish language support, limited after-sales support opportunities, limited or no written or online educational content, lack of simple interfaces and high price policy. On the other hand, MAXQDA, NVivo, and Atlas.ti are more preferred due to the abundance of educational resources, the availability of affordable prices or free services provided by universities, simple and understandable interfaces, and after-sales support.

No study has been found in the Turkish literature about the use of QDAS software or how these programs are used in the communication discipline. However, it has been determined that the local studies on QDAS at this point are in other disciplines. Birkök (2008) and Konan & Yılmaz (2019) study on its use in educational sciences and Güllü (2016) and Zengin (2012) study in religious sciences were the first studies in this sense. Apart from these studies, there are also studies by Mete (2022) and (İlgar & İlgar (2014), which present an exemplary application on how to use the program in the fields of social sciences. These studies focused heavily on the technical use of QDAS software.

When the current studies on QDAS software in the literature and the findings of the research in question are evaluated, it has been determined that the conclusion of the research that the academic use of QDAS software is increasing day by day is also supported by other studies in the literature (O'Kane et al., 2023; Vásquez, 2022).

According to the research findings, the number of articles written with teamwork is higher than the studies with a single author. It is advisable for decision-makers to increase the accessibility of QDAS for researchers. Such software may also be designed with domestic and national segments. Such a development may increase the potential access of more researchers. Here, it is also suggested that using QDAS software in studies in the field of communication should involve using more than one program and understanding each one's key features (Wilk et al., 2019).

The analysis function of the software has been the most fundamental task that researchers assigned to QDAS programs. The ease of use that the program provides the user when managing the data encouraged the researchers to have it. It enables the analysis process to be accelerated and more controlled, especially when working with complex and large-sized data. As Allen (2017), highlights these powerful tools enable large volumes of data to be processed more efficiently with less effort. Among the articles reviewed, especially in the studies working on social media data, the benefits of the data editing and cleaning feature of the programs were emphasized. These applications were also favored to ensure the compatibility of the method and data set.

A significantly large proportion of reviewed articles do not use a transparent or well-

articulated methodology for the analysis process. In fact, in two studies, findings were presented without explaining the method of the research. While some studies describe every step of the analysis process in detail, some studies do not provide any information about what kind of processes they performed.

Ethnography, discourse, and content analysis is the basis for qualitative research in the field of communication (Lewins & Silver, 2007). As revealed in the findings, the use of QDAS was found in all three method types. For example, eighty percent of the articles used the content analysis method. As (Lombard et al., 2002) reveal that QDAS programs such as MAXQDA and NVivo are ideal for the content analysis. Some researchers mentioned that the processes such as coding and data clustering techniques offered by software are more useful than manual processes when conducting content analysis. Therefore, the trend of preference of software in the communication discipline may continue to rise.

In some cases, studies are offering NVivo, MAXQDA, and Atlas.ti as a method, not an analytical tool. These obvious problems raise questions both about the competence of some authors and about the editorial process. This situation indicates that the articles did not go through a good peer review process.

Reliability and validity were ignored in 52 studies in total. This number represents almost half of the sample. In other words, some researchers using QDAS methodically in the Turkish communication literature did research without ensuring reliability and validity. This finding indicates the existence of an important issue. Most of QDAS studies examined do not sufficiently meet the methodological standards. However, Jakobsen & McLaughlin (2004), state that

QDAS could provide more transparent analytical processes and make easier to ensure validity and trustworthiness. This shows that the authors are not fully aware of the benefits of the software programs.

It can be emphasized that communication researchers in Turkey who benefit from QDAS programs mainly publish for national literature. Turkish communication researchers benefiting from QDAS programs primarily target nationally indexed journals rather than internationally indexed ESCI and SSCI journals. 29 studies were also published in journals indexed by Copernicus, EBSCO, DOAJ, etc., which are called other international indexes. Only 11 studies in the dataset were gathered from Web of Science and Scopus databases. The fact that the authors mostly prefer the Turkish language can be seen as the reason for this situation. Studies in English were mostly published in 2021 and 2022. If this trend can be observed to continue in future studies, Turkish communication researchers may gain significant momentum.

The use of QDAS programs by academic staff and graduate students is restricted by the fact that it is a paid product. Although some universities in Turkey offer free use to their employees and graduate students, many universities do not offer such an opportunity. To popularize the use of QDAS, universities should offer opportunities for both students and academic staff at this point. In educational programs, the use of these software tools should lead the way. Many researchers need to buy these programs with their own means and must be trained to use them. Teamwork may be more prominent as knowledge and skills are of critical importance in the analysis to be made in these programs.

As the number of academic journals, number per volume, and academic texts within the issues increases day by day, the demand for tools that enable researchers to make sense of the existing literature is also increasing (O'Kane et al., 2023; Zhang, 2021, p. 865). It can be argued that the QDAS software examined in this study will increase the publication quality of academic journals and that researchers can increase both the quality and quantity of the number of studies they submit to journals with such programs. On the other hand, the thesis that studies and methodological transparency in the field of digital communication can be increased through QDAS programs (Paulus, 2023) can also be expressed in light of the findings obtained in the study. At this point, it can be argued that QDAS software can also encourage relevant studies in the field of digital communication, especially in the communication discipline.

In this study, studies by Turkish authors in DergiPark, WoS, and Scopus are included. In addition to this study, the future use of QDAS programs in the field of communication outside Turkey can be compared. Thus, from country to country, which subjects are examined more in communication studies, what kind of tendency is in methodical approaches, etc. situations may present.

QDAS software is used not only for data analysis but also as a data collection tool (Larsen, 2023). It has been determined that those who are most averse to the use of QDAS software are graduate students (Tshuma, 2023). Future studies can be conducted on the use of QDAS software in postgraduate theses in Turkey, which is not included in the scope of the research, and the authors recommend that educational content suitable for the postgraduate level be added to the curricula of other

disciplines, especially the communication discipline.

Declarations

References

Allen, M. (Ed.). (2017). *The SAGE Encyclopedia of Communication Research Methods*. SAGE publications.

Aromataris, E., & Pearson, A. (2014). The Systematic Review: An Overview. *The American Journal of Nursing*, *114*(3), 53–58. https://doi.org/10.1097/01.NAJ.00 00444496.24228.2c.

Basev, S. E. (2022). The Impact of Social Media on Children's Consumption: Instagram Example. *OPUS Journal of Society Research*, *19*(47), 462-476 10 26466 1077103.

Birkök, M. C. (2008). *Eğitim Bilimlerinde Yeni Araştırma Araçları ve Katkıları: Niteliksel (Kalitatif) Analiz Yazılımları ve Atlas.ti Örneği*. *Uluslararası İnsan Bilimleri Dergisi*, *5*(2), 1-8.

Bourdon, S. (2002). The Integration of Qualitative Data Analysis Software in Research Strategies: Resistances and Possibilities. *Forum Qualitative Sozialforschung/Forum: Qualitative*

Social Research, *3*(2), 1–12. https://doi.org/10.17169/fqs-3.2.850.

Çayır, Y., & Sarıtaş, M. T. (2017). Nitel Veri Analizinde Bilgisayar Kullanımı: Bir Betimsel İçerik Analizi (2011-2016. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, *11*(2), 518–544.

Chimeva, Y. (2022). Organization, Implementation and Analysis of Telecollaboration in Two Educational Projects: Methodological Challenges and Contributions of MAXQDA Software. *TEISEL. Tecnologías Para La Investigación En Segundas Lenguas*, *1*, 1–24. https://doi.org/10.1344/teisel.v1.38362.

Croucher, S. M., & Cronn-Mills, D. (2014). *Understanding Communication Research Methods: A Theoretical and Practical Approach*. Routledge.

Cypress, B. S. (2019). Data Analysis Software in Qualitative Research: Preconceptions, Expectations, and Adoption. *Dimensions of Critical Care Nursing*, *38*(4), 213–220. https://doi.org/10.1097/DCC.0000000000000363.

Dereli, A. B. (2023). MAXQDA: Yaratıcı Veri Analizi Üzerine Notlar. *Karadeniz Teknik Üniversitesi İletişim Araştırmaları Dergisi*, *13*(1), 149–152. https://doi.org/10.53495/e-kiad.1319405

García-Horta, J. B., & Guerra-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. https://doi.org/10.1080/17437270902946686.

Güllü, İ. (2016). Din Sosyolojisinde Epistemolojik ve Metodolojik Değişimler: Nitel Analiz Yazılımlarının Katkı İmkânı, *Journal of International Social Research*, *9*(43), 1232-1240.

Güven, R., & Tekindal, M. A. (2022). *Bilgisayar Destekli Nitel Veri Analizi Programı: MAXQDA (4. Cilt)*. Akademisyen Kitabevi. https://doi.org/10.37609/akya.2178

Hille, S., & Bakker, P. (2014). Engaging the Social News User: Comments on News Sites and Facebook. *Journalism Practice*, *8*(5), 563–572. https://doi.org/10.1080/17512786.2014.899758.

Holbrook, A., & Butcher, L. (1996). Software in Educational Research: The Literature, the Hard Questions, and Some Specific Research Applications. *Australian Educational Researcher*, *23*(3), 55–80.

Hoover, R. S., & Koerber, A. L. (2011). Using NVivo to Answer the Challenges of qualitative Research in Professional Communication: Benefits and Best Practices Tutorial. *Transactions on Professional Communication*, *54*(1), 68–82. https://doi.org/10.1109/TPC.2009.2036896.

Hossler, D., & Scalese-Love, P. (1989). Grounded Meta-Analysis: A Guide for Research Synthesis. *The Review of Higher Education*, *13*(1), 1–28. https://doi.org/10.1353/RHE.1989.0000.

Humble, Á. M. (2012). Qualitative Data Analysis Software: A Call for Understanding, Detail, Intentionality, and Thoughtfulness. *Journal of Family Theory & Review*, *4*(2), 122–137.

https://doi.org/10.1111/j.1756-2589.2012.00125.x.

İlgar, S. C. & İlgar, M. Z. (2014). Nitel Veri Analizinde Bilgisayar Programları Kullanılması. *İZÜ Sosyal Bilimler Dergisi*, *3*(5), 31-78.

Jakobsen, C., & McLaughlin, W. (2004). Communication in Ecosystem Management: A Case Study of Cross-disciplinary Integration in the Assessment Phase of the Interior Columbia Basin Ecosystem Management Project. *Environmental Management*, *33*, 591–605. https://doi.org/10.1007/s00267-003-2900-2.

Jensen, K. B. (Ed.). (2002). *A Handbook of Qualitative Methodologies for Mass Communication Research*. Routledge.

Kamhawi, R., & Weaver, D. (2003). Mass Communication Research Trends from 1980 to 1999. *Journalism & Mass Communication Quarterly*, *80*(1), 7–27. https://doi.org/10.1177/107769990 0308000102.

Karcher, S., Kirilova, D., Pagé, C., & Weber, N. (2021). How Data Curation Enables Epistemically Responsible Reuse Of Qualitative Data. *The Qualitative Report*.

Ke, F. (2009). *A Qualitative Meta-Analysis of Computer Games as Learning Tools, Gaming and Simulations: Concepts, Methodologies, Tools and Applications*. IGI Global.

Konan, N., & Yılmaz, S. (2019). *Eğitim Yönetimi ve Denetimi Alanında Yapılan Lisansüstü Tezlerde Nitel Araştırma ve NVivo. Current Research in Education*, *5*(2), 70-87.

Larsen, F. (2023). Methodology: A Qualitative Approach. In F. Larsen (Ed.), *Commodity Branding: A Qualitative Research Approach to Understanding Modern Energy Brands* (pp. 29–44). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-29966-7_3

Leimbigler, B. (2021). Using MAXQDA for Identifying Frames in Discourse Analysis: Coding and Evaluating Presidential Speeches and Media Samples. In M. C. Gizzi & S. Rädiker (Eds.), *The Practice of Qualitative Data Analysis: Research Examples Using MAXQDA* (pp. 121–133). MAXQDA Press.

Lempp, F., & Testa, M. (2022). A Qualitative Study on the Experiences and Strategies used by French Professional Negotiators to Detect Deception. *International Journal of Conflict Management*, *33*(5), 882–908. https://doi.org/10.1108/IJCMA-02-2022-0039.

Lewins, A., & Silver, C. (2007). *Using Software in Qualitative Research: A Step-by-step Guide*. Sage Publications.

Lombard, M., Snyder-Duch, J., & Bracken, C. C. (2002). Content Analysis in Mass Communication: Assessment and Reporting of Intercoder Reliability. *Human Communication Research*, *28*(4), 587–604. https://doi.org/10.1111/j.1468-2958.2002.tb00826.x.

Marjaei, S., Yazdi, F. A., & Chandrashekara, M. (2019). *MAXQDA and Its Application to LIS Research*. Library Philosophy and Practice.

Marshall, H. (2002). What Do We Do When We Code Data? *Qualitative Research Journal*, *2*(1), 56–70.

Mete, H. (2022). Bilgisayar Destekli Nitel Veri Analizinde Gömülü Teori Deseninin Kullanımı: Çalışma ve Sosyal Güvenlik Bakanlığı Dış İlişkiler Ebültenleri Üzerine Bir

Araştırma. *Journal of Management & Economics Research, 20*(1), 552-568. https://doi.org/10.11611/yead.103 0743.

Miles, M., B., & Huberman, A. M. (1994). *Qualitative Data Analysis*: An Expanded Sourcebook. Sage

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, P. (2009). Preferred Reporting Items for Systematic Reviews and Meta-analyses: The PRISMA Statement. *PLoS Medicine*, *6*(7), 264–269.

Morison, M., & Moir, J. (1998). The Role of Computer Software in the Analysis of Qualitative Data: Efficient Clerk, Research Assistant or Trojan Horse? *Journal of Advanced Nursing*, *28*(1), 106–116. https://doi.org/10.1046/j.1365-2648.1998.00768.x.

Neuman, D. (2014). Qualitative Research in Educational Communications and Technology: A Brief Introduction to Principles and Procedures. *Journal of Computing in Higher Education*, *26*(1), 69–86. https://doi.org/10.1007/s12528-014-9078-x.

Niedbalski, J., & Ślęzak, I. (2022). Encounters with CAQDAS: Advice for Beginner Users of Computer Software for Qualitative Research. *Encounters*, *4*, 22–2022.

O'Kane, P. (2020). Demystifying CAQDAS: A Series of Dilemmas. In *Advancing Methodological Thought and Practice* (pp. 133–152). Emerald Publishing Limited.

O'Kane, P., Ott, D. L., Smith, A. D., & Brown, T. C. (2023). Understanding Computer-Assisted Qualitative Data Analysis Software as a Tool to Enhance Systematic Literature Reviews in Human Resource Development. *Human Resource Development Review*, *22*(2), 291–307. https://doi.org/10.1177/15344843 221144668

Oliveira, A. P. B., & Angeluci, A. C. B. (2019). Competences and Skills in Data Journalism: Perceptions on the Profile of Brazilian Professionals. *Brazilian Journalism Research*, *15*(2), 381–399. https://doi.org/10.25200/BJR.v15n 2.2019.1141.

Oliveira, M., Bitencourt, C., Teixeira, E., & Santos, A. C. (2013). Thematic Content Analysis: Is There a Difference Between the Support Provided by the MAXQDA® and NVivo® Software Packages? *Proceedings of the 12th European Conference on Research Methods for Business and Management Studies [Symposium]*, 304–314.

Paulus, T. M. (2023). Using Qualitative Data Analysis Software to Support Digital Research Workflows. *Human Resource Development Review*, *22*(1), 139–148. https://doi.org/10.1177/15344843 221138381

Paulus, T. M., & Lester, J. N. (2020). Using Software to Support Qualitative Data Analysis. In M. R. M. Ward & S. Delamont (Eds.), *Handbook of Qualitative Research in Education* (pp. 420–429). Edward Elgar Publishing.

Peters, V., & Wester, F. (2007). How Qualitative Data Analysis Software May Support the Qualitative Analysis Process. *Quality & Quantity: International Journal of Methodology*, *41*(5), 635–659. https://doi.org/10.1007/s11135-006-9016-8.

Richards, T., & Richards, L. (1991). The NUD*IST Qualitative Data Analysis System. *Qualitative Sociology*, *14*,

307–324. https://doi.org/10.1007/BF00989643.

Sağlam, Y., & Kanadlı, S. (2019). *Nitel Veri Analizinde Kodlama* (2nd ed.). Pegem Akademi Yayıncılık. https://doi.org/10.14527/9786053185512

Sánchez-Gómez, M. C., Martín-Cilleros, M. V., & Sánchez Sánchez, G. (2019). Evaluation of Computer Assisted Qualitative Data Analysis Software (CAQDAS) Applied to Research. *Learning Technology for Education Challenges: 8th International Workshop, LTEC 2019, Zamora, Spain, July 15–18, 2019, Proceedings 8*, 474.

Schreier, M. (2014). Qualitative Content Analysis. In U. Flick (Ed.), *The SAGE Handbook of Qualitative Data Analysis* (pp. 170–183). Sage Publications. https://doi.org/10.4135/9781446282243.

Tshuma, N. (2023). *Reflecting on the Knowledge-İdentity Nexus in the Learning Design of an Online Postgraduate Short Course*. In T. Jaffer, S. Govender & L. Czerniewicz (Eds.), *Learning Design Voice* (pp. 1-8). EdTech Books. https://edtechbooks.org/ldvoices/knowledge_nexus_identity

Vásquez, C. (Ed.). (2022). *Research Methods for Digital Discourse Analysis* (1st ed.). Bloomsbury Academic.

Victor, L. (2008). Systematic Reviewing. *Social Research Update*, *54*, 1–4.

Volk, S. C. (2016). A Systematic Review of 40 Years of Public Relations Evaluation and Measurement Research: Looking into the Past, the Present, and Future. *Public Relations Review*, *42*(5), 962–977.

https://doi.org/10.1016/j.pubrev.2016.07.003.

Wilk, V., Soutar, G. N., & Harrigan, P. (2019). Tackling Social Media Data Analysis: Comparing and Contrasting QSR NVivo and Leximancer. *Qualitative Market Research: An International Journal*, *22*(2), 94–113. https://doi.org/10.1108/QMR-01-2017-0021.

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. https://doi.org/10.1177/0894439315596311.

Zamawe, F. C. (2015). The Implication of Using Nvivo Software in Qualitative Data Analysis: Evidence-based Reflections. *Malawi Medical Journal*, *27*(1). https://doi.org/10.4314/mmj.v27i1.4.

Zengin, H. K. (2012). Din Eğitimi Bilimi Araştırmalarında Videoların Nitel Analizi: Nvivo8 Örneği. *Ankara Üniversitesi İlahiyat Fakültesi Dergisi*, *53*(1), 85–109. https://doi.org/10.1501/Ilhfak_0000001097

Zhang, T. (2021). Will the increase in Publication Volumes "Dilute" Prestigious Journals' Impact Factors? A Trend Analysis of the FT50 Journals. *Scientometrics*, *126*(1), 863–869. https://doi.org/10.1007/s11192-020-03736-7

Appendices

Appendix 1: Change of QDAS Studies Over Time