

## USE OF EXPLORATORY SEQUENTIAL DESIGN AS A MIXED METHOD DESIGN IN THE FIELD OF COMMUNICATION: POSSIBLE PROBLEMS AND SUGGESTIONS

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### ABSTRACT

Communication science, which has made radical progress in the field of social sciences, is turning to new research methods. One of the reasons for this is the developments in new communication technologies. In recent years, it has been observed that the importance of mixed method research in communication research has been increasing. Indeed, it is seen that the mixed method research method is not fully understood in most studies. The lack of understanding of the mixed method also makes it difficult to understand the pattern types of the method. Therefore, this methodological review article focuses on exploratory sequential design in particular while examining the use of mixed methods in the field of communication. First, mixed methods and exploratory sequential design are explained. Then, the use of mixed methods in communication research is discussed. Finally, the problems that may be encountered in the use of exploratory sequential design in communication research are explained. Some suggestions are offered to researchers in the field of communication regarding these problems. In this context, it is thought that the article will be useful to researchers, academicians and students in the field of communication on mixed method research and exploratory sequential design.

**Keywords:** Communication, Mixed Method Design, Exploratory Sequential Design, Problems, Suggestions

**Jel Code:** Y, Z

*Received/Gönderim: 01.02.2025 – Accepted/Kabul: 10.04.2025*

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Garip, S. (2025). Use of exploratory sequential design as a mixed method design in the field of communication: possible problems and suggestions. *Akademik Açı*, 5(1): 11- 23. DOI: 10.59597/akademikaci.1631306

## İLETİŞİM ALANINDA KARMA YÖNTEM TASARIMI OLARAK KEŞİFSEL SIRALI TASARIMIN KULLANIMI: OLASI SORUNLAR VE ÖNERİLER

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### ÖZET

Sosyal bilimler alanında köklü bir ilerleme kaydeden iletişim bilimi, nitel araştırma ve nicel araştırmanın yanı sıra yeni araştırma yöntemlerine yönelmektedir. Bunun nedenlerinden biri de yeni iletişim teknolojilerindeki gelişmelerdir. Yeni iletişim teknolojilerinin gelişimi yeni ve problem çözme odaklı araştırma yöntemlerini kullanmayı gerekli kılmaktadır. Son yıllarda ise iletişim araştırmalarında karma yöntem araştırmalarının öneminin giderek arttığı görülmektedir. Nitekim çoğu araştırmada karma yöntem araştırma yönteminin tam olarak anlaşılamadığı görülmektedir. Karma yöntemin anlaşılamaması yöntemin desen türlerinin de anlaşılmasını zorlaştırmaktadır. Dolayısıyla bu metodolojik derleme makalesi, iletişim alanında karma yöntem kullanımını incelerken, özellikle keşfedici ardışık tasarıma odaklanmaktadır. Öncelikle karma yöntemler ve keşfedici ardışık tasarım açıklanmaktadır. Ardından iletişim araştırmalarında karma yöntem kullanımı tartışılmaktadır. Son olarak iletişim araştırmalarında keşfedici ardışık tasarımın kullanımında karşılaşılabilecek sorunlar açıklanmaktadır. Bu sorunlarla ilgili olarak iletişim alanındaki araştırmacılara bazı öneriler sunulmaktadır. Açıklanan sorunların ve önerilerin yönetime yönelik bakış açısını değiştireceği öngörülmektedir. Bu bağlamda makalenin, karma yöntem araştırması ve keşfedici ardışık tasarım konusunda iletişim alanındaki araştırmacılara, akademisyenlere, öğrencilere ve diğer uygulayıcılara yararlı olacağı düşünülmektedir.

**Anahtar Kelimeler:** İletişim, Karma Yöntem Tasarımı, Keşfedici Ardışık Tasarım, Sorunlar, Öneriler

**Jel Kod:** Y, Z

### INTRODUCTION

The mixed methods tradition is a research paradigm that brings together qualitative and quantitative data sources and reflects multiple perspectives (Rossman, 1985). Exploratory sequential design, one of the designs of the mixed method tradition, is a configuration that starts with the qualitative research process and continues with the quantitative research process (Shorten & Smith, 2017). This article focuses on exploratory sequential design from mixed methods designs in terms of communication field. The field of communication science, which emerged at the basis of social sciences, is a discipline that focuses on the communication processes that have developed around humans from past to present. Continuing developments in communication technologies force communication research to use different methodological possibilities.

The mixed method research tradition has been seen as a new/alternative method in research in the field of communication. This methodology has many advantages, such as revealing the topics of the communication field in depth and making it generalizable (DeCoster & Lichtenstein, 2012). Exploratory sequential design has also begun to be used frequently in the field of communication, especially for the purpose of developing measurement tools. In this sense, studies on tool development such as social networking sites (Khan, Azhar, Rahman & Akhtar, 2022), online victimization (Erreygers, Symons & Pabian, 2022), artificial intelligence literacy (Laupichler, Aster, Haverkamp & Raupach, 2023), etc. are

noteworthy. As a matter of fact, it is thought that attention should be paid to the use of exploratory sequential design in future research in the field of communication. Because there are difficulties with this design, researchers need to be aware of these difficulties. Therefore, this study aims to improve the understanding of mixed methods tradition and exploratory sequential design by researchers in the field of communication. At the same time, it offers some suggestions in terms of methodology by trying out the difficulties that exploratory sequential design will have in a research to be conducted in the field of communication.

## 1. UNDERSTANDING THE MIXED METHODS RESEARCH TRADITION

Before discussing mixed methods in communication research based on social sciences, it will be useful to understand the mixed methods tradition. When we look at the historical process of the mixed methods research tradition, we see that it dates back to before the 80s. As a matter of fact, it is noteworthy that the concept of mixed methods research was not used at that time. In 1959, Campbell and Fiske conducted a psychological study that would form the basis of this type of method. In this research, accuracy assessments of psychological attributes were discussed using both quantitative and qualitative data. This research has become an example for other researchers to use multiple data (Cresswel & Plano Clark, 2018, p. 25). In 1973, Sieber also recommended combining and interacting quantitative and qualitative information in field and survey research. Campbell in 1974 and Cronbach in 1975 also stated that data obtained as a result of qualitative research should be added to experimental studies conducted within the scope of quantitative research. Similarly, in 1978, Denzin emphasized that quantitative and qualitative research data should be used together (Cresswel v& Plano Clark, 2018, p. 25). In the 1980s, it can be seen that there was a focus on expressing the use of qualitative and quantitative research methods together with a single concept. *“In the early 1990s, there was a move towards systematically seeking harmony between quantitative and qualitative data through mixed methods, and the idea of using different types of research designs together emerged”* (Cresswel, 2017, p. 15). In 2006, Bryman focused on various mixed methods approaches, while in 2007, Creswell and Plano Clark also worked on mixed methods designs (Creswell & Plano Clark, 2018).

A mixed method can be defined as *“a method in which a single data source is insufficient, results need to be explained, research findings need to be generalized, a second method is needed to improve the first method, a theoretical stance needs to be used, and a general research purpose can best be addressed with more than one phase or project”* (Creswell & Clark, 2015, p. 9). Therefore, it can be seen that the philosophy of this type of method is pragmatism. From this philosophical perspective, mixed methods are a new idea or working paradigm that brings together multiple perspectives (Rossman, 1985, p. 19). In short, the mixed method research tradition can be defined as the researcher combining both qualitative and quantitative sources to provide a deep understanding and validity of the subject she/he is working on, and explaining the existing subject in all its theoretical and methodological aspects.

As can be understood from the definitions, mixed method research has its purposes. The objectives can be listed as follows (Giannakaki, 2005): Triangulation, Complementarity, Development, Initiation and Expansion.

The purpose of triangulation is to gather qualitative and quantitative sources simultaneously and emphasize that they should be used independently of each other. In a mixed study conducted for complementarity purposes, for example, the results obtained from the quantitative study are used to increase the reliability and validity of the findings obtained from the qualitative study. For developmental purposes, the results obtained from qualitative or quantitative research help shape the method used in subsequent stages as the research continues. The initial purpose of the mixed method is to create new questions or hypotheses for the research under the influence of a different method. Finally, the purpose of extension simply means expanding the scope of the research. In other words, it is the integration of different methods to investigate different factors of the research and the discussion of the results.

Sample selection is also very important in mixed method studies conducted for specific purposes. In a research structured according to mixed methods, the sample should be designed to answer the research questions. The generalization problem of the sample should not be ignored. The number of sampling techniques may vary. Both non-probability sampling and probability sampling techniques can be used together. The size of the sample may also vary depending on the subject, purpose, problem and questions of the research. Different samples can be studied. When considering the sample, the depth of the data to be obtained should not be ignored. Sample selection should be decided in the research design. However, it may be necessary to reach different samples in the qualitative research process. Sample selection should be supported by expert opinions. The data to be obtained in the context of sample selection will appear in quantitative and qualitative forms (Teddlı & Yu, 2007).

Before choosing the mixed method research tradition, the strengths and weaknesses of this method type must be known. According to Johnson and Onwuegbuzie (2004, p. 21), in mixed methods research, the weakness of one method can be supported by the strengths of the other method. Since more than one method is used, in-depth answers to the research questions can be found. While qualitative data adds meaning to quantitative data, quantitative data clarifies qualitative data. The results obtained from the research can be generalized. Different perspectives can be revealed. In terms of theory and practice, mixed research results provide clear information. What has been said so far describes the strengths of the mixed methods research tradition. On the other hand, if a single researcher conducts mixed methods research, it may be difficult to manage both the qualitative and quantitative research processes. The researcher must have competence in qualitative and quantitative research traditions, data collection processes and analysis stages. This method can be costly and time consuming to conduct research. All of these factors should be considered. According to experts on the method, the researcher should work

with a single method. All of these are seen as weaknesses of the mixed research method (Johnson & Onwuegbuzie, 2004, p. 21).

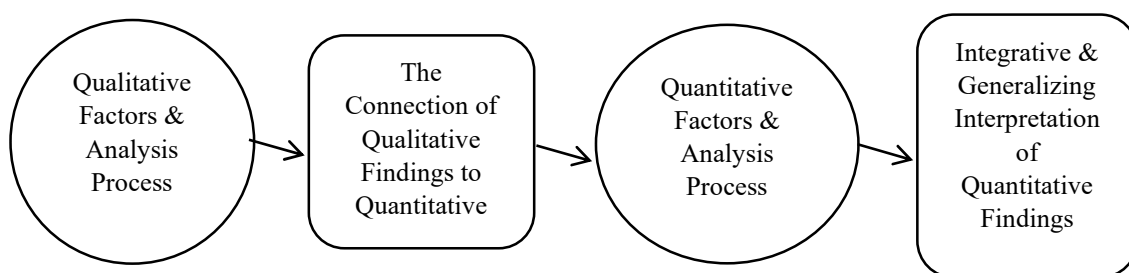
The basis of adopting mixed methods in the field of social sciences is to understand and explain all aspects of human nature and behavior. It is seen that the use of multiple data, introduced by Campbell and Fiske in 1959, contributes to the in-depth study of research in the field of social sciences and the generalization of the results obtained in a reliable and valid way despite the human nature factor.

## 2. DESCRIBING THE EXPLORATORY SEQUENTIAL RESEARCH DESIGN

Before defining exploratory sequential design, it is necessary to note that different designs are included in the mixed methods research tradition. Creswell and Plano Clark (2007) divide mixed methods designs into four main categories:

- Triangulation (convergence, data transformation, validation of quantitative data and multilevel model).
- Embedded (embedded experimental and embedded relational model).
- Explanatory (sequential explanatory and participant choice model).
- Exploratory (scale development and taxonomy development).

The exploratory sequential design consists of two analysis stages: Qualitative and Quantitative. The purpose of this design is to evaluate the findings obtained from the quantitative research in order to better interpret the findings obtained as a result of the qualitative research. In a study conducted with this design, the researcher focuses more on the qualitative research process. The quantitative research process supports qualitative research at this point. During the data analysis process, the findings obtained from both stages are interpreted by establishing interaction (Shorten & Smith, 2017, p. 74). The exploratory sequential design shown in Figure 1 will facilitate understanding of the process.



**Figure 1:** Exploratory Sequential Design Process (Plano Clark, 2019)

As seen in Figure 1, the exploratory sequential design is actually the opposite of the explanatory sequential design. Particularly in-depth data collection and analysis stages in the qualitative research process move towards a positivist approach. With this design method, measurement methods can be

developed within the determined universe and sample (Creswell, 2017, p. 225). In addition, a taxonomy can be developed within the scope of the topic being researched (Creswell & Plano Clark, 2007). In other words, exploratory sequential design is a valid design when there is no measurement or measurement tool on the subject under investigation, the form of the subject is unknown, and there is no theory or research on the subject (Cresswel, Plano Clark, Gutman & Hanson, 2003). While the data obtained from qualitative research with exploratory sequential design can be generalized, the semantic basis is created in the results obtained with quantitative research. To explain the exploratory sequential design with an example; let's assume that we want to investigate the motivation of university students to quit drinking alcohol. Using an exploratory sequential design, qualitative data were first collected on motivations for quitting alcohol. By analyzing these data, certain codes-categories and themes are reached. The identified themes are integrated into the quantitative research process together with expert opinions. A tool is created in the quantitative research process. This tool is applied to university students who consume more alcohol and the reliability and accuracy of the motivations revealed are checked.

Attention should be paid to the correct selection of exploratory sequential design. This design can be chosen if the dynamics of the topic under investigation are more suitable for qualitative research and quantitative research data collection tools cannot be used initially. There may not be many sources in the literature on the subject of research. Therefore, an in-depth exploration may be needed. If the qualitative data obtained after this need cannot provide an answer, new research questions arise and quantitative data is needed, this design can be chosen.

As with other mixed methods research designs, the exploratory sequential design has its challenges. The basis of these difficulties lies in whether the data obtained from qualitative research is appropriate for the topic being researched. Likewise, determining the correct sample and reaching this sample are among the difficulties of design in both qualitative and quantitative research (Creswell & Creswell, 2021, p. 15). Any setback encountered in qualitative research will prevent the correct structuring of quantitative research. Therefore, in this case, the accuracy and reliability of the general conclusion drawn from the research will be questioned. However, the exploratory sequential design reveals different perspectives because it includes both qualitative and quantitative research data in the context of description, implementation and reporting.

### **3. USING THE MIXED METHODS TRADITION IN THE FIELD OF COMMUNICATION**

The field of communication, which is based on social sciences, can actually be seen as an interdisciplinary field. So much so that it was discussed as a subject within the discipline of sociology in the 19th century. In the 20th century, it was considered a separate discipline (Aziz, 2006). The acceptance of communication as a discipline depends on the increasing technological developments from past to present. The changes experienced in communication processes ranging from non-verbal

communication to artificial intelligence technologies have paved the way for communication to be discussed as a separate discipline. Research conducted in the field of communication seeks to understand the issues on which communication is based and to find solutions to problems related to these issues. In the search for solutions, the relationship between mass media, new media and people is emphasized. At this point, the methodology to be chosen in the research should approach the subject and the problem holistically.

When considering methodology in research in the field of communication, it is said that the researcher should not ignore the risks of the deterministic approach. However, determinism and objectivism should not be avoided, because in this case, it leads the researcher to subjectivism (Özügür, 2011). As a matter of fact, technological advances in the field of communication also change the topics researched. Therefore, in the context of the researched topic, the selection of methodology, the selection of the sample, the data collection process and the data analysis process will inevitably change. Es, Wieringa, and Schäfer (2018) talk about the changing data collection process, analysis, and methods by giving the example of new media research in the field of communication. The innovation of the methodology allows it to contribute to the field of communication in different disciplines. For example, in the field of new media, research is being conducted especially on social media platforms. However, a single method is not always sufficient to collect data. The data collected is limited, which causes criticism of most research in the field of communication (Vázquez, 2017). Therefore, integrating multiple methods in a holistic manner will make the results of research in the field of communication more consistent. Therefore, the mixed method research tradition provides significant innovation and benefit to research in the field of communication at this point.

In general, it can be seen that the quantitative research tradition was more prominent in the social sciences before 1960. After 1960, researchers turned to the qualitative research tradition. As a matter of fact, it has been observed that researchers focusing on these two trends have experienced a polarization. In other words, paradigm wars have occurred (Punch, 2005). In the face of this situation, the mixed method research tradition has become more important in the field of social sciences as a new methodology. The benefits of using mixed methods as a methodology, especially in research conducted in the field of communication, are listed as follows (DeCoster & Lichtenstein, 2012):

- Using mixed methods in a communication study minimizes the inherent limitations of qualitative and quantitative research.
- Because researchers have used both methods for a long time, they have a common exchange of information.
- Ensuring mutual exchange of information enables the development of mixed methods in the field of communication.

- Combining quantitative and qualitative methods in the field of communication deepens the meaning of numerical data and enables the digitization of the semantic whole.
- The use of mixed methods increases the scientific value of communication research and enables it to appeal to a wider audience.
- The use of mixed methods in the field of communication provides more concrete evidence to communication science.

As can be seen, the mixed method tradition is an important guide to research in the field of communication and enables the field to be enriched with different methodological perspectives. This article specifically examines the place of exploratory sequential design, one of the mixed research tradition designs, in communication research.

### **3.1. The Use of Exploratory Sequential Design in the Field of Communication: Possible Problems and Suggestions**

The topics discussed in communication research are interdisciplinary, integrated and holistic issues. Therefore, understanding the communication processes experienced in the research and choosing the methodology to be used is a very important stage. The benefits that the mixed methods tradition offers to research in the field of communication are also compatible with the holistic structure of communication research.

In research conducted in the field of communication, it is seen that the data obtained from qualitative and quantitative research are given priority in the context of the subject of interest (Decoster & Lichtenstein, 2012). As mentioned, studies structured on the basis of exploratory sequential design mostly focus on scale development processes or taxonomy development (Creswell, 2017; Creswell & Plano Clark, 2007). When some researches in the field of communication are examined, it is seen that there are measurement tools that have been introduced to the communication discipline. It is noteworthy that in these studies, topics within concepts such as new technologies, social media, and new media are explored (Vázquez, 2017). For example, Khan et al. (2022) developed a measurement tool to measure the use of social networking sites by Indian users during the COVID-19 pandemic. In another study, it was observed that a fictitious online victimization measurement tool was developed for adolescents (Erreygers et al., 2022). As in the studies given as examples, in developing communication technologies, the methodological discovery process is now used in topics such as new media, social media, metaverse and artificial intelligence. For example, Laupichler et al. (2023) developed a measurement tool to determine the artificial intelligence literacy of young people and adults.

The increasing number of exploratory methodological studies in the field of communication also serve as an example for researchers who design new research for the future. However, at this point it is necessary to mention the difficulties of exploratory sequential design. For example, a researcher is



investigating the perceptions of people between the ages of 14-18 regarding TV series/movie content on social media. She wants to structure her research in line with the exploratory sequential design. A qualitative study can be conducted initially, starting from the question of how people between the ages of 14-18 interact with TV series/film content on social media. With purposeful sampling, focus group discussions or in-depth interviews can be conducted with people between the ages of 14-18 who follow different TV series/movie accounts on social media. A measurement tool is developed with the results. Then, with the measurement tool developed on the main sample, it can be evaluated how valid and reliable the perceptions about social media content are within the scope of the subject. The difficulties of exploratory sequential design can be listed as follows based on this example:

- The example study is about developing a measurement tool. Therefore, a long time will be needed. The time factor can be seen as a significant difficulty.
- The sample study covers people between the ages of 14-18. Therefore, the researcher must obtain the necessary permissions or ethics committee approval. As a matter of fact, since the quantitative research process will be shaped in line with the results of the qualitative research, it will be difficult to explain the quantitative research process at the beginning.
- The researcher may not be impartial while collecting data during the quantitative research process.
- Since this is a measurement tool, the researcher may not know how to evaluate or use the data obtained as a result of qualitative research.
- It can be difficult to ensure the validity and reliability of quantitative values obtained as a result of the quantitative research process.

If we ask the question "How can the difficulties listed above be overcome?", the following suggestions are offered to the researcher or research groups:

- The time factor should not be ignored. Researchers need to have this time. At the same time, they need to plan their time correctly and be patient.
- If an application is made to any theory to obtain approval, the quantitative research process must be explained in the application file, even if it is not fully formed. For this purpose, a pilot application can be conducted within the scope of the research and the outlines of the quantitative research process can be determined.
- In order to ensure impartiality in the data collection phase of the quantitative research process, a small sample is first taken in line with purposeful sampling methods. In the next stage, a different and larger sample should be used.
- The researcher must correctly use and analyze the data obtained from qualitative research. He/she must have competence in the data analysis and reporting process in qualitative

research. In particular, he/she must be familiar with the thematic coding (code-category-theme) process.

- Finally, statistical package programs (Spss, Amos, Lisrel etc.) should be known for the analysis of data obtained from quantitative research. Or, expert help should be sought for analysis. The scores obtained as a result of the analysis should coincide with the validity and reliability values in the literature. All obtained results should be interpreted correctly, clearly and consistently.

## CONCLUSION

This article discusses the use of the mixed methods tradition and one of its designs, the exploratory sequential design, in the field of communication within the scope of social sciences. The aim of the study is to show that the use of mixed methods and exploratory sequential design is important in the field of communication, as in other disciplines. It is thought that this article will contribute to the understanding of the mixed methods tradition in the social sciences in general and in the field of communication specifically.

The benefits of the mixed methods tradition to the field of communication increase the value of this approach. The increasing prevalence of exploratory sequential design in the field of communication necessitates discussion of possible methodological problems in measurement development processes. In this article, in addition to the definitions made in the context of literature, the subject was tried to be reinforced with the examples given by the author. Finally, the article ends with the problems and suggestions that may be encountered in the use of exploratory sequential design in the field of communication.

Future research in the field of communication should consider the methodological opportunities that mixed methods and exploratory sequential designs provide to communication issues (qualitative data collection, quantitative data collection, two different perspectives, holistic approach, in-depth meaning, generalization with numerical data).

## GENİŞLETİLMİŞ ÖZET

İletişim alanı disiplinlerarası bir alan olmakla birlikte kendi sınırlarını çizen ayrı bir disiplin alanıdır. Özellikle sözsüz iletişimden kitle iletişim araçlarına, sosyal medyadan metaverse kadar uzanan iletişim teknolojilerindeki gelişmeler araştırma yöntemi kullanımının önemini daha da artırmaktadır. Çünkü her yeni konu, olay ve olgular tek bir bakış açısı ve araştırma yaklaşımına bağlı olmamaktadır. Dolayısıyla iletişim alanında yer alan konuları, sorunları ya da yenilikleri bütünsel olarak ele almak gerekmektedir. Bu noktada doğru metodolojiyi kullanmak araştırmaların hem literatüre hem de topluma fayda sağlama (somut çıktı sunma) konusunda kalitesini artıracaktır.

İletişim araştırmalarında doğru metodoloji seçerken belirlenimcilik ve nesnelcilik yaklaşımından uzak durmak gerektiği üzerinde durulmaktadır. Fakat bu yaklaşım araştırmacının

öznelliğinin daha baskın olmasına da neden olabilmektedir (Özügurlu, 2011). Karma yöntem araştırma geleneği ise hem nesnelliği hem de öznelliği dengeleyen metodolojik bir yaklaşımdır. Pragmatizm felsefesini benimseyen karma yöntem araştırma geleneği, çoklu görüşleri bir araya getiren bir araştırma fikridir (Rossman, 1985). İletişim araştırmalarında karma yöntemin kullanılmasının; araştırmanın sınırlılığının kesin çizilmesi, somut verilerin geçerli ve güvenilir olması ve araştırmanın bilimsel değerinin artması vb. etkileri vardır (DeCoster & Lichtenstein, 2012). Karma yöntem geleneğinin iletişim alanındaki araştırmalara sunduğu faydalar, iletişim araştırmalarının bütüncül yapısıyla da uyuşmaktadır.

İletişim araştırmalarında, araştırılan konu, çözülmesi umulan problem bağlamında bazen nitel araştırmaya bazen de nicel araştırmaya daha çok odaklanılmaktadır (Decoster & Lichtenstein, 2012). Karma yöntem araştırma desenlerinden olan keşfedici sıralı desende nitel ve nicelin birleştiği daha çok ölçek geliştirme ve taksonomi geliştirme üzerine yoğunlaşan araştırmalarda kullanılmaktadır (Creswell & Plano Clark, 2007). Keşfedici sıralı desen, nitel araştırma süreciyle başlayan bir keşif yolculuğudur. Nitel araştırmadan elde edilen bulguları desteklemek daha somut hale getirmek adına nicel araştırma süreci yürütülür. Her iki araştırma sürecinden elde edilen sonuçlar arasında bir etkileşim kurulur. (Shorten & Smith, 2017). Böylelikle hem derinlikli hem de genelleme olasılığı yüksek sonuçlar üzerine literatür tartışmaları yapılabilir.

İletişim araştırmalarında keşfedici sıralı desen kullanımında araştırmacıların bazı sorunlarla karşılaştığı görülmektedir. Bu sorunlar; zaman faktörü, etik kurul onay izni alınmasının zorlaşması, veri toplama sürecinde nesnel hareket edememe ve her iki araştırma yaklaşımına araştırmacının yeterli becerisinin olmaması şeklinde sıralanabilir. Bu sorunlar karma araştırma yöntemi geleneğinde keşfedici sıralı desene göre yapılandırılan bir iletişim araştırmasının kalitesini olumsuz etkileyecektir. Araştırma sonuçlarının doğruluğunu ve tutarlı olmasını engelleyecektir. Dolayısıyla bu makalede tanımlanan olası sorunların çözülebilmesi için araştırmacılara bazı öneriler sunulmaktadır.

Sonuç olarak, bu makalede ele alınan konu başlıklarının, karma yöntem geleneğinin genel olarak sosyal bilimler spesifik olarak da iletişim alanında anlaşılmasına katkı sağlayacağı söylenebilir. Makalenin keşfedici sıralı desen kullanımını tanımlamada ve kullanmada sorun yaşayan iletişim araştırmacılarına faydalı olacağı düşünülmektedir.

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