

Saša MIJALKOVIĆ, PhD¹

University of Criminal Investigation and Police Studies, Belgrade, Serbia

Vera AREŽINA, PhD²

Faculty of Political Sciences, University of Belgrade, Belgrade, Serbia

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Qualitative, Quantitative and Mixed Methods in Researching Security and Political Phenomena

Abstract: *Qualitative, quantitative and mixed methods are applied in security, political and other social sciences in order to conduct research and achieve or verify scientific knowledge. The aim of this paper is to explain the advantages of qualitative methods - interview, focus group, observation or quantitative methods – survey, scales, etc.*

Besides, we will explain how to conduct research in security and political sciences by using some mixed methods. The mixed methods combine qualitative and quantitative methods in order to expand understanding of a certain problem. For example, mixed methods may combine interview and survey. Also, mixed method design may combine certain elements of research designs such as the research question, data collection or data analysis. Therefore, the mixed research designs, known as the third wave, are mostly applied in the research of security, political and other social phenomena.

Keywords: *Methodology of scientific research, qualitative methods, quantitative methods, mixed methods, security and political phenomena.*

¹ sasa.mijalkovic@kpu.edu.rs

² vera.arezina@fpn.bg.ac.rs

Introduction

Since the middle of the 20th century, there has been a strict division into qualitative and quantitative methods in many social sciences, upon many criteria. Upon applicability criteria, the quantitative method is applicable to phenomena that can be expressed in terms of quantity, and the qualitative method is concerned with qualitative phenomena, aiming to discover the underlying motives of human behavior (Kothari C.R, 2004: 3). Upon criteria of approach, in quantitative methods, the main approach is positivism, and the main goal of science is to discover laws that represent probabilistic generalizations of descriptions of sets of sensory experiences (Stojnov, 2005: 269). On the other hand, in qualitative methods, main approaches are constructivism, relativism, and postmodernism, aiming to find out the role of language and discourse (Stojnov, 2005: 278).

Qualitative methods, such as observation, interviews, or focus groups as well quantitative methods such as surveys or scales are commonly used in many researches of security, political or social phenomena. Both methods have their advantages and disadvantages related to cost, knowledge of researchers, opportunities and circumstances and other decisive factors. For more than two decades, mixed methods have been increasingly used, combining elements from the previously mentioned methods.

Qualitative and quantitative, as well as mixed methods are important for researchers in political science, but also other social sciences to obtain valid data in their studies. By applying these methods, researchers in security science can obtain various data that help them confirm their initial assumptions, but often also to gain knowledge through which they make a new contribution to science.

In order to conduct a scientific research, it is very important to apply various methods of obtaining data which are of great significance for science. In qualitative or quantitative methods, it is necessary to indicate elements such as determining the problem and the subject of research. An important part of any research includes hypotheses, but also the determination of methods and samples, i.e. those people who will be our target group for research (Arežina, 2021: 280). It is very important

that we know which method we will apply based on these phases. A clear structure of work has to be set before the start of the research, which will take into account these phases as well. When analyzing research methods, it should be pointed out that this refers to activities aimed at gaining scientific knowledge (Mijalković, Arežina, 2021: 7-9; Bazić, Danilović, 2015). According to the subject, as well the goals and hypothesis of the research, it is determined which methods will be used for data collection.

Theoretical Framework

Methodologists and many researches in social sciences point out quantitative and qualitative methods, or mixed methods that are created by combining the two (Mijalković, Popović Mančević, 2018: 71-79; Arežina, 2021: 280). Creswell (2012), Narens (2002), Matthews and Ross (2010) as well as Marczyk, DeMatteo and Festinger (2005) all state the role of qualitative and quantitative methods and research designs in security and other social sciences. John W. Creswell in his book *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* argue that mixed methods are mostly applied because there is more insight to be gained from the combination of both qualitative and quantitative research than either form by itself (Creswell, 2014: 203). In the paper entitled *Assessing the Impact of Climate Change on Environmental Security*, Arežina & Spasojević analyze climate change and its effects on the development of migration, i.e. the appearance of environmental migrants. The paper also largely deals with the analysis of the content of documents, i.e. specifically the reports, primarily by international organizations. The significance of this paper is also in its assessments and analyses of trends and perspectives of the development of environmental migrations in the coming decades (Arežina, Spasojević, 2020).

Teddlie and Tashakkori in *Foundations of Mixed Methods Research - Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*, point out that mixed methods are popular in methodology and researches in security and other social sciences. They have considered all phases of mixed methods from research design, data collection, data analysis and conclusions (Teddlie, Tashakkori,

2009). In the article *Research Methodology in Political Sciences*, Arežina studies the entire methodological process of research in political science, from choosing a topic to defining a research question, subject, goals, hypotheses, methods, as well as scientific and security contribution. Also, the contribution of this paper is to help young researchers to easily and more successfully overcome the initial obstacles that they usually encounter at the beginning of their scientific development and writing scientific papers, but also their final doctoral thesis (Arežina, 2021).

Živan Ristić in the book *Combining quantitative and qualitative research*, indicates different methodological approaches and sampling in quantitative, qualitative and mixed research designs. After application of qualitative or quantitative methods, he points out the role of all stages in research, especially data analysis (Ristić, 2016).

Qualitative Methods

Qualitative methods include interview, focus group, observation, case studies, narrative studies, qualitative content analysis etc. Our methodologists (Milosavljević, Radosavljević, Danilović) argue that qualitative content analysis has to discover the meaning of key words in the text, as well as the context (Milosavljević, Radosavljević, 2008: 564). In addition to the above, methodologists such as Creswell and others also classify narrative studies i.e. biographical method here, where researchers are expected to monitor and study the life of an individual (Creswell, 2014: 42). Qualitative methods are of great importance for science and scientific research. This method is a way to collect data from different respondents, whether they are citizens or people who have been or are in certain important state positions or are, for example, members of some important associations or parties. In this paper we will point out the most applied qualitative methods, such as interview, focus group and observation.

Interview is a qualitative method with collecting data through personal and oral conversation between an interviewer and a respondent. Although the term conversation is questionable, it does not imply an informal type of communication between the mentioned actors, but is a conversation that follows a certain course, led by the interviewer through

a questionnaire or a concept. Interview is used to gather data about beliefs, ideas, opinions or attitudes. It is very important in conducting an interview that the interviewer and the respondent are present in person, because everything else reduces the interviewer's ability to create a more realistic picture in his final report.

There are different types of interviews, such as undirected and directed interviews. In an undirected interview, the interviewer is given more freedom, i.e. he determines the number and schedule of questions, and therefore it is also called 'free interview'. On the contrary, in a directed interview, the freedom of the interviewer is limited, and there are clearly developed procedures and instruments. When it comes to directed interview, three types of interviews appear in some classifications, so we differ "first, directed orientation interview, second, conducted and third, rigorous interview" (Milosavljević, Radosavljević, 2003: 488). Who to interview? It depends of the subject of research. In security studies, if our subject of research refers to security phenomena or processes, it may be "well-informed officials, officers and security authorities, to experts and specialists" (Milošević, Milojević, 2001: 239). Although senior officials have first-hand experience of important processes, "various mid-level and entry-level professionals also contribute to national security processes and policies, and constitute valuable sources to understand government security practices beyond the institutionalized view from the top" (Van Puyvelde, 2018: 384). Some guidelines for security interviewing can be applied, although they were published twenty years ago (GIAC - SANS Institute, 2004).

Focus groups are also a qualitative method wherein researchers conduct a group interview on some topic with focus group participants. It is similar to a group interview, only the scope of participants is different (Milosavljević, Radosavljević, 2003: 493). This type of data collection has become more and more interesting for researchers in Serbia in recent years. It is possible to obtain data in focus groups that cannot be found in a quantitative research. Therefore, it is recommended that while conducting a quantitative research, the obtained data have to be additionally examined through qualitative method, such as a focus group, in order to obtain new data.

When it comes to the number of focus group participants, there are variations in opinions. For example, Đorđević in his book lists a range of 6 to 20 participants of some targeted population (Đorđević, 2012: 138-139). This range is somewhat problematic. Indeed, the minimum number of participants coincides with the views of numerous authors. Some state in their works that the minimum optimal number is 8 participants. On the other hand, the number of 20 participants for one focus group is a problem. According to the cited author, it would be quite feasible to divide the number of one such focus group into two equal groups of 10 participants each. That is why we come to the answer to the maximum recommended number of participants in one focus group. It is best to have 10 or 12 participants. The reason for this determination is the impact it has on the course of the focus group and the possibilities of the implementers - researchers of the same. It is very difficult and extremely ungrateful for one researcher to conduct a focus group on his own, because it is necessary to follow all activities and write down all statements. Today, the application of this method is also facilitated through the digital devices that record voices, and the audio recording may be used later to supplement the report itself. Therefore, it is recommended that the researcher has a colleague or a side controller in order to record the data, reactions, emotions of the focus group participants and thus manage to gather complete data.

The method of *observation* is also a qualitative method in which the researcher records his observations about a phenomenon or process in an impartial and objective way. With this method, some processes can be analyzed later, such as e.g. the work of administrative officials or deputies in the national assembly of a state. "When researching security phenomena, most often the actors of the phenomenon are the object of observation" (Milošević, Milojević, 2001: 235). We may observe any event in our everyday life, but in political and other social sciences observation method is usually applied to gather data regarding public events, such as assembly session, political party conference, political protest, book presentation, etc. Also, we can observe the participants of a certain event because of their statements, gestures, reactions, ways of expressing emotions, etc. "All the mentioned events are characterized by complexity in terms of duration, spaces in which they take place, alternating activities, the number and roles of their participants, the messages that are sent, as well as the types of artifacts that are used" (Vučinić Nešković, 2013: 119).

Applying this method enables the collection of a large amount of data. However, if we observe some larger sets or complex, long-lasting phenomena, it is not possible to apply this method by only one researcher. In that case, it is necessary to have more researchers trained to work at the field. Today, researchers often use modern digital technologies, such as sound recorders, telephones, cameras and other devices to record certain statements, moments and other often very interesting and important data for scientific research. Additionally, in the case of security phenomena such as civil unrests, acts of war, etc., observation is carried out by using optical sights, radars, various sound and thermal means, rangefinders and detectors (Milošević, Milojević, 2001: 236-237). Problems with observation as a method refer to subsequent data sorting and report writing, given the large number and exceptional unstructured nature of the original data, which certainly makes it easier to process them. However, despite the different types of problems, this method largely provides scientifically important data, which can be updated and upgraded by new data (Đorđević, 2012: 138-139).

On the other hand in an interview, it is obviously who we want to interrogate. The problem may arise when applying another method, i.e. focus groups. In the case of this method there are potentially more problems: first, it is a very small sample of participants, because the number of focus group participants is generally in the range from 6 to a maximum of 12 people. The frequent shortcoming of these researches is in the researchers themselves who, when they encounter the refusal of certain participants in the research, reach for alternative participants, which can to some extent, more or less change the course of the research and thereby the obtained results.

Quantitative Methods

Main quantitative methods refer to surveys, experiments, scales and quantitative data analysis. Quantitative data analysis is applied to determine the frequency of certain words or phrases. Additionally, it is the systematic classification of communication content into categories, based on the code (Milosavljević, Radosavljević, 2003: 561; Riffe, Lacy, and Fico,

2005: 23). In this paper we will point out to surveys, experiments, scales as quantitative methods.

Survey provides a quantitative or numeric description of attitudes or trends of a population. Since 1817 surveys have been widely used in education, when Marc Antoine Jullien de Paris designed a 34-page international survey of national education and several decades later, G. Stanley Hall surveyed children. During 1907, the Pittsburgh Survey “examined social problems, including educational issues ranging from educational planning for school buildings to issues of children in classrooms who are slow learners” (Creswell, 2012: 376). In security and other social sciences have been applied “electronic surveys such as computer-assisted telephone interviewing (CATI), voice recognition (VR), touchtone data entry (TDE), and other approaches represent innovations in self-administered questionnaires that make use of the computer and telephone” (Babbie, 1998). Beside, various types of surveys are used in research, such as field, telephone or online surveys. First, we have to make samples of that population with “cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection with the intent of generalizing from a sample to a population” (Creswell, 2014). In a survey, it is important to respect the representativeness of the samples (Ristić, 2016; Milosavljević, Radosavljević, 2013) as well the reliability and validity and to “check whether the data collection instruments correspond to the research question and hypotheses, which is achieved by measuring scales” (Arežina, 2021: 281). Arežina & Spasojević in scientific papers *A contribution to the research on the representation of women at significant social positions in the Republic of Serbia* and *Attitudes of the citizens of the Republic of Serbia about the COVID-19 virus* elaborate the attitudes of citizens through data they obtained by online surveys. The specificity of these studies is that they were conducted in the moments of negative rise of the COVID-19 pandemic. While one research even studies the influence of this virus, which is a novelty when it comes to research topics in Serbia, as well as worldwide, another research deals with the position of women in important positions (Arežina, Spasojević, 2021a, 2021b).

Scales are a quantitative method according to Creswell, Tedlly or Ristic, yet some methodologists argue that scales are the instrument in measurement (Milosavljević, Radosavljević). Beside different methodo-

logical approaches, many methodologists agree that there are several types of scales, such as nominal, ordinal, ratio, and interval scales (Creswell, 2012: 165–167; Milosavljević, Radosavljević, 2013: 596–599). Beside, methodologists as well many researchers apply other scales such as Thurston, Likert and Bogardus scale (Arežina, 2021: 281–282; Ristić, 2016: 183). Creswell argues that in research of attitudinal information in education and other social sciences, a survey usually begins with personal information questions (e.g., date and place of birth, sex, current academic standing, and ethnic background). Next, students have to indicate their attitude toward adapting to college on questions using a 9-point scale from *applies very closely to me* to *doesn't apply to me at all*. The questions refer to the quality of the student's adjustment to the college (e.g. attending class, makes friends or feels tense). In order to analyze these questions, it is important to group these questions into four "scales (called *subscales*): Academic Adjustment (24 questions), Social Adjustment (20 questions), Emotional Adjustment (15 questions), and Goal Commitment–Institutional Attachment (15 questions). Then the analyst sums the scores to the questions on each scale to identify an individual's score on each scale" (Creswell, 2012: 153–154). Vera Arežina in her book *Problems of measuring the environmental security* studied the measurement of environmental security, especially assessment and scales. Beside, numerous environmental problems are on the world agendas of many international organizations, as well as bilateral and multilateral agreements, with the aim of mitigating and solving those problems (Arežina, 2010).

Experiment is also a quantitative method, where participants are divided in test and control groups. The test group gets the treatment, and the control group does not and the behaviour of participants of those groups has to be compared. Every experiment has a plan and the same phases, such as preexperimental, experimental, and postexperimental. There are many varieties of experiments - true, quasi-experiments, laboratory, ex-post facto, etc. (Kirk, 2009: 30–32; Ristić, 2016: 117–119; Milosavljević, Radosavljević, 2013: 542–545).

An experiment, especially a laboratory one, is often difficult to apply in many social sciences, because of the procedure, phases as well as the agreement of participants. But it may be applied in security sciences if participants are small groups of police and military officials.

Several researchers have recently published two experimental studies of countermeasures against threats in the Czech Republic. “Subjects were recruited from two populations: university students and security professionals (police and army officers)” (Chytilek et al. 2022). In the first experimental study aim was framing of information about Covid-19 in order to comply with government measures to limit the spread of the coronavirus (more than 300 participants were divided into three experimental groups and a control one). The second, laboratory experiment referred to differences between emotional responses to conventional and cyber terrorism (284 participants were divided in one control and two experimental groups were shown a commercial television news report about the possible danger of conventional terrorist attack and the second experimental group were shown a threat of cyber terrorist attack). “Exposure to threat of lethal cyberterrorism is not innocuous in terms of people’s emotional responses. It elicits negative emotions (anger, fear, disgust and anxiety) only slightly weaker than conventional terrorism” (Chytilek et al. 2022). Besides, many applied experimental methods “leverage controlled tests that attempt to capture real-world behavior to determine how the applied system behaves. Applied experimental research largely covers validation testing to see if “the right system was built” for the problem” (Edgar, Manz, 2017, 271).

Also, at various universities there are courses such as experimental methods or security experiments and measurement with the aim of “gaining a broad knowledge of psycholinguistic research methods and techniques, including lab hardware and software Excel, Qualtrics, and E-Prime or PsychoPy” (Universitet Leiden, 2024; Universitet Vrije Amsterdam, 2024).

Therefore, it is very important to consider the application of various programs for processing the data such as SPSS - Statistical Package for the Social Sciences, R, Tosmane (Tool for Small-N Analysis) or NVIVO, as well as the program MAXQDA which can be used for processing qualitative, but also data obtained through the use of mixed methods. But, these programs are only tools for processing the data and cannot be identified with the methodology as a social science (Wickam, Grolemond, 2017).

Mixed Methods

During the last twenty years, the classification into qualitative and quantitative methods has been overcome, and mixed methods have been used increasingly in many social sciences. Mixed methods combine certain elements from qualitative and quantitative methods such as the research question, data collection or data analysis. In mixed methods, the most important is research question, and then mixing i.e. combining of qualitative and quantitative methods in order to expand understanding of certain problem. For example, mixing of “a qualitative interview in an experimental design allows to directly discuss the issues under investigation and to gain insight into the perspectives taken by the participants and the meanings they attach to certain phenomena” (Ševkušić, 2009, 51). Also, mixed methods allow to apply interview as qualitative method and survey with provided answers, in order to systematically measure the factors that are based on previously conducted research. If the “findings obtained by different approaches agree, it is considered that conclusions from the data can be derived with greater reliability. If the findings disagree, then the result of the research is that the researcher has more knowledge and can modify interpretations and conclusions regarding the investigated phenomenon” (Ševkušić, 2009, 51).

So far, more than nine mix methods designs have been used, created by Creswell, Morgan, Tashakkori and others. We point out several mixed research designs, known as a *third wave*, developed by methodologists Creswell, Morgan or Tashakkori. Morgan argues that qualitative and quantitative methods can be used at the same time. Some qualitative methods can improve data collecting and assessment in quantitative research designs, and vice versa (Morgan, 1998: 365–366). On the other hand, Tashakkori and Teddlie have developed several types of *conversion research design* – *single, parallel, or sequential mixed research design*, and others. Single mix method has three phases – conceptualization, methodological and phase of conclusions. We will point out some of them. Single method is applied with only one data collecting and it has only one - qualitative or quantitative conclusion (Teddlie, Tashakkori,

2010: 25–26). Parallel mix method at the same time has both qualitative and quantitative research question, data collecting and data analysis. Sequential mixed research design is similar, but qualitative or quantitative methods are partially used in order to obtain a conclusion (Teddle, Tashakkori, 2009: 155). Besides, Creswell, Piano-Clark, Hanson and Gutman have developed six types of mixed methods upon criteria such as theoretical approach, implementation, status and integration of qualitative or quantitative methods (Creswell, Piano-Clark, 2007: 79–80). The problem may arise because many researchers make their own mix methods research designs which can deviate from the usual design (research problem, subject, goals, hypotheses, and contribution).

It is considered that mixed methods have a great application in the education, pedagogy, social work, and health protection due to the complexity of phenomena that require data from multiple perspectives, i.e. information about different aspects of the phenomenon and their mutual relationships (Creswell, 2003; Tashakkori & Teddlie, 2003). In political and security sciences many mixed methods have been applied in researches upon the Theory of Change - TOC, aiming to explain the process of change by outlining the causal pathways from "outputs (goods and services delivered by the project) through direct outcomes... through other 'intermediate states' towards impact" (UNEP, 2017:1). Consequently, TOC design is conducted in order to define improvement in the state of the environment and "measurable indicators for the direct outcomes... Those indicators have to be SMART - Simple, Measurable, Accurate, Relevant, and Time-bound" (Arežina, Spasojević, 2020: 131–132).

Besides, several researchers have conducted mixed methods in *A Large-Scale Interview Study on Information Security in and Attacks against Small and Medium-sized Enterprises*. They agree that SMEs is critical for society, because in Germany 38.8% of all employees work in SMEs, but many of them cannot protect themselves from attacks, unlike large companies which often have considerable budgets and security teams. According to them, small and medium-sized enterprises (SMEs) have increasingly become victims of cyberattacks in recent years. Only in 2019, the FBI's Internet Crime Complaint Center received a large number of complaints concerning cyberattacks, resulting in estimated losses of more than \$3.5 billion (FBI, 2019, 3). First, they had as quantitative method two

surveys conducted by official authorities and commercial organizations: 8,000 surveys about the cyberattacks in the USA in 2005 and other surveys refer to cyberattacks against the UK companies. It is stated in findings that companies are not affected equally by cyberattacks, because some sectors are targeted more frequently or some sectors suffer more online crime incidents than others. From August 2018 to January 2019 “based on these research questions, we conducted computer assisted telephone-interviews (CATI) with representatives of SMEs in Germany (n = 5,000). We were interested in their experiences and problems with cybercrime, as well as their perception of risks and handling of information security” (Huaman et. al, 2021). Upon data analysis, findings included statements on sensitivity and risk perceptions, deployed security measures, reported incidents, as well key findings for researchers, companies and governments.

Conclusion

Different methods of data collecting are applied in research of political and security phenomena. Studies and analyses especially in political science, with the constant changes, represent a dynamic and changing matter and use various methods to obtain much-needed data. The obtained data enable political science to develop in the direction of confirming attitudes, but especially when it comes to the domain of modern politics, and to supplement new data in so far unexplored areas.

As explained in the paper, the successful application of qualitative and quantitative methods in data collection largely depends on many factors. Therefore, for the accuracy and success of the analysis, the experience and knowledge of a researcher conducting any kind of research activity with other actors are necessary. Thus, it is very important to know and to properly apply methods in accordance to the phenomena, research question and hypothesis. In addition, the representativeness of the sample, especially in quantitative methods, is extremely important and often neglected or an aspect insufficiently familiar to researchers, which greatly affects the validity and significance of the data obtained by research.

Various factors can affect the implementation of research, such as cost (finances), time, human resources or the ability of the researcher to ask

sensitive questions and thus enable the objective scientific knowledge of the research. Besides, it is important to apply the qualitative or quantitative methods properly.

As a special approach, the methodologists of the third wave have created mixed methods as a combination of some elements of the qualitative and quantitative methods. Mixed methods provide more expedient methods to obtain data, because the data obtained in a survey as a quantitative method can be supplemented or confirmed by application of the qualitative methods. Therefore, with a good reason, the methodologists of the third methodological wave recommend that when implementing quantitative methods, qualitative ones must be used in order for researchers to be more confident in the results they have come up with. This is especially interesting and applicable in political science because, for example, in addition to the answers of citizens through some kind of quantitative research, much can be learned if the participants in any of the quality methods are former or current actors, high-ranking individuals or analysts and observers. This example illustrates how, by combining the use of different methods, it is good to apply a mixed approach in practice.

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Квалитативне, квантитативне и мешовите методе истраживања безбедносних и политичких појава

Резиме: Квалитативне методе, као што су посматрање, интервјуи или фокус групе, као и квантитативне методе, као што су анкете или скале, имају велику примену у истраживању безбедносних и политичких појава. Више од две деценије све чешће се користе мешовите методе које комбинују констатационе наведених метода – „прећи кућу“ или „прећа методологија“ (на пример, комбиноване методе могу комбиновати интервју и анкету).

Квалитативне и квантитативне, али и мешовите методе, важне су да би истраживачи безбедносних и политичких наука у својим истраживањима добили релевантне и валидне податке, који им омогућавају да потврде своје почетне претпоставке, али често и да би стекли нова сазнања и тиме остварили научни допринос.

Успешна примена квалитативних и квантитативних метода у прикупљању података зависи од многих околности, посебно од искуства и знања истраживача. Стога је важно познавати и правилно применити методе у складу са предметом, истраживачким питањем и хипотезом. Поред тога, посебно у примени квантитативних метода, изузетно је важна репрезентативност узорка, јер у великој мери утиче на валидност и значај података. Осим тога, на спровођење истраживања могу утицати различити фактори, као што су трошкови (финансије), време, људски ресурси и друго.

Кључне речи: методологија научно истраживања, квалитативне методе, квантитативне методе, мешовите методе, безбедносне и политичке појаве.