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RESEARCH ARTICLE

Methodological Considerations When Determining Sample Size in Qualitative Research

Pr. Belal Boutera[1*], Dr. Dhahbi Brahim [2], Pr. Aouine Belgacem [3], Pr. Louhidi Faouzi [4]

[1-4] Social Development and Community Service Laboratory, El Oued University, Algeria

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***Corresponding Author**

bilal-bouterra@univ-eloued.dz

ABSTRACT

Many researchers in social sciences often ask about the number of vocabulary required to achieve the goals of the study in qualitative research, This issue, and despite its importance, many books specialized in this field do not attach importance to this part, Therefore it was necessary to point out this matter, as the quality and comprehensiveness of the data that we aim to obtain from the vocabulary under study, in addition to achieving the goals of the study in qualitative research is closely related to the study sample and the method of its selection, so this article will try to shed light on the criteria and controls for specifying the sample size appropriate in qualitative research, and touch on an important issue of data saturation.

INTRODUCTION

Sampling in qualitative and quantitative research differs according to the purpose of these studies. While researchers in quantitative research use various probabilistic random sampling procedures to select their study subjects, ensuring representativeness in the selected sample from the research population, researchers in qualitative research do not give much attention to this principle due to the nature and objectives of these studies, which differ greatly from quantitative research. This means that there are circumstances related to the researcher themselves or to the nature or characteristics of individuals.

The data targeted by qualitative research are not all equal and identical; these studies focus on collecting data that are directly and precisely related to the research problem. The number of subjects does not matter as much as exploring the range of different opinions and representations of individuals that are relevant to the research problem and its sub-questions. In qualitative research, samples are primarily concerned with the richness of information and data rather than their size.

Qualitative studies provide a degree of flexibility due to the researcher's direct interaction with the phenomenon, focusing on understanding, building perceptions, and identifying feelings around the studied phenomenon. It also allows the researcher to interact directly and effectively with participants. The researcher uses various data collection tools, including document analysis, observation of participants' behavior, or conducting interviews. The sample in qualitative research is purposefully selected to serve the research objectives. However, the considerations made by the researcher when determining sample size in qualitative research have their own characteristics and features that differentiate them from other types of research. Hence, this study aims to explore some of the methodological considerations that guide the selection of samples in qualitative research and to clarify the main principles that determine sample size.

This scientific article aims to achieve a number of important objectives related to the topic of "sampling in qualitative research," which we consider very important given the confusion

experienced by many seasoned researchers regarding the type and size of the most appropriate sample for qualitative research, not to mention novice students in the field who lack sufficient experience. We summarize these objectives as follows:

- Understanding the logic of sampling in qualitative research.
- Identifying the most commonly used samples in qualitative research.
- Determining the factors that influence sample size in qualitative research.
- The criterion of data saturation as a decisive factor in determining sample size in qualitative research.

1. Basic Concepts:

- **Qualitative Research:** The qualitative nature of research allows for a comprehensive understanding of the subject of study. Qualitative research is interpretative, explanatory, inductive, multi-method, and in-depth. It is also flexible and sensitive to the characteristics of the participants and their social context. This flexibility in qualitative research enables the researcher to adapt, modify, and gradually build their methodology as the project progresses (Fadhel Dallio, 2014: p. 86).
- **Sample:** It is a technical procedure undertaken by the researcher, which involves selecting a group of subjects from the study population with the aim of conducting the research with them, whether through surveys, interviews, observations, etc. In other words, it is the observation of a part in order to gather information about the whole, a practice that has been common for a long time. However, its scientific organization has emerged recently with the introduction of concepts such as chance and randomness (Piergiorgio Corbetta, 2003, p. 210).

2. Sampling Method in Qualitative Research:

It is worth noting that in qualitative research, the term "participants" is used for the sample because they actively and directly participate in the research. The researcher is less concerned with generalization and more focused on an in-depth study of the phenomenon. The logic of sampling in qualitative research follows the principle of selecting individuals who will provide the most relevant and insightful information related to the research problem. Therefore, the use of non-probabilistic (non-random) sampling is more methodologically effective than probabilistic sampling, as the researcher aims to create a more realistic research design by developing a sampling framework capable of answering the research questions.

- **Purposeful Sampling:**

Most researchers tend to use purposeful (judgmental) sampling because it offers complete freedom in selection according to the research objectives. "This type of sampling allows the researcher to obtain the experiences, insights, and opinions of individuals most relevant to the research problem and who are capable of providing rich information and data. In other words, selecting individuals or groups that offer the greatest insight into the research question" (Kelly J. Devers & Richard M. Frankel, 2000: p. 2649). In addition to purposeful sampling, theoretical sampling is another method used in qualitative research, where individuals are selected based on the emerging theory we aim to generate. The data collected and analyzed each time will determine whether more individuals need to be included or if the data has reached saturation.

- **Theoretical Sampling:**

Morse (1996) defines theoretical sampling as "the process of data collection for generating a theory, where the researcher simultaneously collects, codes, and analyzes the data, and then determines the data to be collected next to develop the emerging theory." Thus, data collection is influenced by emerging analysis and continues through sequential and successive stages, determined by changes in the criteria for selecting individuals. Therefore, participants and individuals are chosen based on the need, not prior to the start of the research (Janice M. Morse, Peggy Anne Field, 1996, p. 130). This

sampling method allows the researcher to find data in a way that enables them to create new categories. Data collection ends when theoretical saturation is reached.

Theoretical saturation means that the collected data has become repetitive, without adding any new relevant information to refine the categories or introduce new details. At this point, the researcher can focus their time and effort on gathering the necessary information for only the unsaturated categories. The goal of theoretical sampling is to obtain useful data that explains the categories, rather than seeking representation or increasing statistical generalizability, as is the case in quantitative research. It is often confused with purposeful sampling methods commonly used in qualitative research. The difference lies in the fact that in theoretical sampling, the researcher does not know in advance who should be chosen or what should be selected, unlike in purposeful sampling (Bassim-Mahmoud, 2018, p. 100-101).

It is important to highlight that there are commonalities between qualitative research samples, as outlined by several researchers such as Marshall and Rossman (1999), Coyne and Fougère (2000), and Segron (1997), among others. The key points are as follows:

- Sampling in qualitative research occurs naturally, where people act and live their everyday lives.
- These samples align with the research questions and objectives in qualitative research, aiming to achieve theoretical depth and precise understanding.
- Sampling in these studies is done sequentially and continuously, meaning that decisions about size are linked to the information obtained from the initial individuals.
- Sample size is rarely predetermined in qualitative research, as researchers do not know when theoretical saturation will be reached (Laura S. Abrams, Vol.9(4): 540).
- It is embodied in a reasonably flexible design, where the criteria for selecting individuals change as the study evolves (Tuckett, 2004: 47-61).

3. Factors Determining Sample Size in Qualitative Research:

There are several important factors that control the number of sufficient interviews for research, including the following:

- **Sample and Selection Methods:**

  One of the factors controlling the number of sufficient interviews is the type of sampling techniques used in the study. The number of research subjects usually varies depending on whether probabilistic or non-probabilistic sampling is used, and on the availability and accessibility of the subjects (Patton, M.Q., 2002: p. 232).

- **Availability of Resources for the Study:**

  The availability of sufficient material resources can be a direct reason for limiting the selection of adequate samples for the study and conducting interviews with them (Kvale, S. 1996). If the researcher or the person conducting the interviews can only travel within a limited area, geographic constraints may prevent them from accessing more research subjects. For instance, geographic boundaries may impose a cultural limit on the sample (Stoodley, 2009: p. 76).

- **Cognitive Saturation:**

  The researcher continues conducting interviews with the sample until reaching cognitive saturation, which has been widely debated regarding the degree and timing of saturation. This term was first used by Glaser and Strauss, but it remained unclear. They argue that the researcher continues collecting and analyzing data in one category until saturation is reached, then moves to another category, and so on (Glaser, B.G., and Strauss, 1967: p. 61). Opinions and definitions of cognitive saturation in interviews have varied, with some considering that conducting interviews with a homogeneous group is sufficient to achieve cognitive saturation. Conceptually, saturation may represent the desired endpoint for data collection

to understand the studied phenomenon, and this principle will be elaborated on further in the coming paragraphs.

- **Homogeneity of the Research Population:**

  In cases where the research population is heterogeneous, there is a greater need to increase the number of interviews with members of that population to achieve a better understanding of the topic.

- **Number and Complexity of Interviews:**

  The number of interviews already conducted is related to the number of necessary interviews; the weaker the interviews, the greater the need for additional ones. Additionally, the more complex the data obtained from the conducted interviews, the greater the need for further interviews (Ryan, G.W., and Bernard, H.R., 2006).

- **Experience and Ability to Conduct Interviews:**

  One factor that determines the number of interviews a researcher should conduct is their ability to achieve the objectives of their study, along with their experience in conducting research interviews and their capacity to handle a large number of interviews without experiencing fatigue (Mason, M. 2010, Article 8), which could reduce their effectiveness, especially during long interviews.

- **Nature of the Research and Its Purpose:**
  The number of interviews also depends on the nature and purpose of the research. If the research aims to focus on certain topics in depth, analyze them in detail, or determine the differences between individuals and groups, more interviews with additional subjects will be required.

The procedure for generating the sample and selecting the number of subjects in qualitative research, especially when using interviews, depends on the design, objectives, and philosophy of the research. It is also necessary to consider the number of participants (the research team) involved in the study, to avoid overwhelming them with data they cannot adequately manage, analyze, or interpret.

Qualitative interviewers should continue working and selecting cases until all the information provided by the respondents is no longer new and becomes repetitive. Qualitative research differs from quantitative research in that the latter focuses on the number of people, while qualitative research focuses on the range of meanings, which should determine the number of people interviewed in the study. However, achieving data saturation can be difficult for many qualitative interviewers because they must combine sampling, data collection, and data analysis. It is not possible to predetermine the number of necessary interviews.

From this discussion, it becomes clear that determining the sample size for interviews and the number of appropriate cases for a specific qualitative study is not something easily addressed by formulas. Rather, it depends entirely on the nature of the study, its design, research objectives, questions, and the underlying philosophical stance adopted. Additionally, one of the characteristics of qualitative research is that the sample is built as the research progresses (Rosalind Edwards and Janet Holland, 2013: p. 7).

4. Data Saturation as a Key Factor in Determining Sample Size in Qualitative Research:

Data saturation is considered one of the key criteria for determining sample size in qualitative research. By reviewing various specialized books on qualitative research in the social sciences, it becomes evident that there is significant attention given to this crucial criterion. Researchers may stop sampling once cognitive saturation in the collected data is achieved. Below are some opinions related to this criterion (cognitive saturation).

There is no one-size-fits-all approach for achieving and verifying data saturation, particularly in qualitative research. The designs of these studies are not uniform, and even their research objectives differ. However, many researchers agree on some principles to determine saturation, the most important being the lack of new and unique data, such as in interviews. Guest et al. (2006) argue that

data saturation can be achieved with as few as six (6) interviews, depending on the sample size of the research population. Moreover, according to Burmeister & Aitken (2012), data saturation does not mean merely exhausting the resources available to the researcher. It is not solely linked to numbers or the total number of individuals studied; rather, it is connected to the depth and richness of the data.

Albine Moser & Irene Korstjens (2018) suggest that the most important criterion for determining saturation is the availability of in-depth and sufficient data that clarify the patterns, categories, and diversity of the phenomenon under study. This can be achieved by the researcher reviewing their results and analyses, and deciding whether to stop selecting new participants or continue conducting additional observations or interviews until saturation is reached (Albine Moser & Irene Korstjens, 2018, vol. 24, no. 1, p. 11).

However, many academic theses place more emphasis on numerical considerations than on data saturation. Lori and Story (2014) confirmed this in their study by reviewing 560 academic theses, concluding that sample sizes were often chosen for reasons other than data saturation (Fusch, P. I., & Ness, L. R., 2015).

There are many factors that determine saturation in qualitative research, and perhaps the most prominent of these factors are the main objectives of the research. These objectives are what determine the sample size. A small study with a limited number of subjects and simple objectives may achieve saturation more quickly than another study with a larger number of subjects. Thus, saturation is not always linked to the number of subjects as much as it is related to the research objectives from which each study or research originates.

Ranjit Kumar (2011) believes that saturation depends on the diversity of the situation or phenomenon under study. The more diverse the situation, the larger the number of people from whom information needs to be collected to reach the saturation point. Saturation is more relevant to situations where information is collected, such as when using group interviews like focus groups or discussion sessions. The researcher strives to gather as much diverse information as possible, and when no new information appears, it means that saturation has been reached (Ranjit Kumar, 2011, pp. 193, 194).

Thus, cognitive saturation is considered a significant issue in qualitative research, unlike quantitative research. Patricia A. Adler argues that quantitative researchers typically have an idea of the number of cases they need to test their hypotheses or answer their questions. These researchers collect limited data from a wide range of people and often rely on correlations between various variables and events to achieve understanding and prediction. On the other hand, qualitative research, due to its exploratory nature, may not provide researchers with an idea of how much data should be collected. However, what distinguishes these studies is that they usually rely on fewer subjects while delving deeper into understanding individuals' behaviors, beliefs, and cultures (Sarah Elsie Baker, Rosalind Edwards, p. 5). Therefore, sample size cannot be determined at the outset in the latter type of research, which highlights the need to rely on the criterion of cognitive saturation (data saturation) as a guide to the appropriate sample size for the research.

Thus, data saturation in qualitative research is a highly subjective matter. The researcher is the one who collects the data, and they alone can decide when saturation is reached and whether to stop selecting further subjects from the research population.

Despite the importance of data saturation in qualitative research, especially compared to quantitative research, it remains a topic of significant debate among research methodologists and is more complex than what has been outlined above. Clive Roland Boddy (2016) argues that while the concept of saturation is highly useful at the conceptual level, it provides little guidance in estimating sample size in research. His reasoning is that we cannot estimate the time and effort required to conduct the research unless we pre-determine the number of sample subjects to work with (Clive Roland Boddy, 2016, pp. 01-04). Many researchers, influenced by the quantitative research mindset, believe that a larger number of participants will provide more and better data. However, this principle does not apply to qualitative research, as Mason (2010) points out. More subjects do not necessarily mean more new information and insights, and this may even contradict research ethics, as including many

subjects without fully utilizing the information and insights they provide could be considered unethical (Michelle O'Reilly, p. 196).

In conclusion, the main goal of research is often to expand and develop our knowledge and understanding of phenomena. This goal is achieved through various mechanisms adopted by the researcher, including the selection of samples and their size. Therefore, focusing on achieving research objectives is more important than determining the sample size and the number of participants. Once the information collected is sufficient to achieve the research goal, this serves as the true criterion for stopping the selection of further subjects and participants.

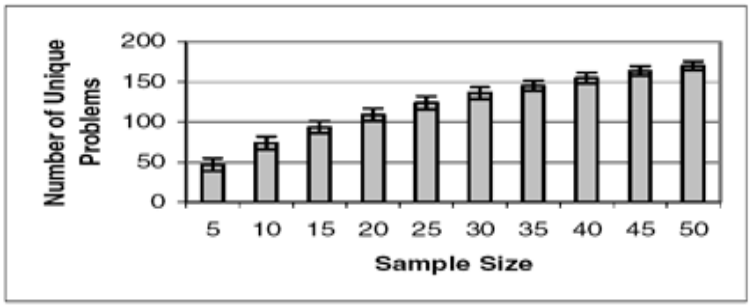
5. The Impact of Sample Size on the Type and Amount of Data Collected in Qualitative Research:

Undoubtedly, the methodological debate surrounding the determination of sample size in qualitative research primarily aims to obtain precise and comprehensive data about the subject under study. Increasing the number of sample subjects can produce diverse and comprehensive data about the topic. However, increasing the number of subjects is not always beneficial in an absolute sense; there are limits beyond which additional subjects do not provide added value. This is confirmed by a study conducted by (Johnny Blair, Frederick Conrad, 2006) on the impact of sample size on the cognitive results collected through research interviews with participants (Johnny Blair, Frederick Conrad, 2006, pp. 4041-4046).

The study found the following:

When interviews were conducted with five (5) sample subjects, the average number of unique issues obtained from the participants was 46. This number gradually increased as the sample size grew. By the time 50 interviews were conducted, the average number of unique issues identified had reached 169. Beyond this point, conducting additional interviews revealed fewer new issues. Thus, the value of additional interviews diminishes, depending on the specific nature of each research topic.

Figure 01: The Average Number of Unique and Total Issues by Sample Size



However, it is certain that qualitative research focuses on a deep and precise understanding of phenomena through the opinions, ideas, and beliefs of the participants. This approach differs in its research philosophy from quantitative research and its purposes. Therefore, it is crucial to emphasize the quality and sufficiency of the data in qualitative research to achieve research quality and a true, deep understanding of the research problems. As such, the sample size in qualitative studies is determined by the needs of the research, the achievement of its objectives, and the answers to its questions, rather than being predetermined as in quantitative research.

6. CONCLUSION:

This study began with a methodological framework, followed by a presentation of the theoretical framework, which covered the main sampling methods in qualitative research, the factors that determine sample size, data saturation (theoretical) as an important factor in determining sample size, and the impact of sample size on the type and amount of data collected in qualitative research. Based on what we have discussed, we emphasize the importance of appropriate sample size in qualitative research, as it remains a topic of scientific and methodological debate in social research. The size of the sample is governed by numerous methodological considerations, as well as the nature

of the topics and research problems that qualitative research seeks to address. However, the criterion of data saturation (theoretical) and its adequacy has been the most prominent in these scientific discussions, seen as a noteworthy criterion and potentially the key determinant of the most appropriate sample size in this type of research.

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