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Practical Step towards Sampling in Qualitative Research; Focused on Grounded Theory

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Abstract

Today, there is a growing trend towards qualitative research in different areas of academic investigations. However, students face difficulties in deciding on qualitative methods of research, because most of the literature on qualitative research focuses on the philosophical and theoretical aspects, and they hardly offer any practical guidelines. This problem is rooted in the essence of qualitative research, which makes the details of the research process unachievable at the beginning. As a result, the features of the sampling plan—like the accurate size and form of the sampling—remain uncertain until after the data has been gathered, and this makes the jury doubtful about the approval of the research proposal. Hence, framing an appropriate and assayable plan for sampling can be of great help in the approval and execution of qualitative research plans. From this perspective, the present article aims to design a framework for a sampling plan in qualitative researches using theoretical sources of the grounded theory method and researchers' suggestions based on practical involvement, as well as the recent experience of the authors in grounded theory research. By studying these sources, and considering the feedback for and practical involvement in the grounded theory method, a two-stage plan of sampling is proposed. The initial stage aims to ensure adequate diversity for the appropriate distribution of the samples, and the second, as a theoretical sampling stage, guarantees the theoretical attribute of sampling in qualitative research.

Key words: *sampling, the sample size in qualitative research, grounded theory research*

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Introduction

The most common reason for sampling is that we cannot study all the individuals of a society. So a researcher is driven to use methods to take a sample from the intended population. Therefore, most of the theoretical discussions on sampling in research projects and dissertations focus on clarifying the relation between the sample and the studied society, and consequently on the extent to which the sample introduces that society. Concepts such as confidence interval or statistical significance (Field 2009) are used in studying this issue, and they directly affect the size or the number of the selected samples. The sample size is important because the aim of such a sampling plan is to generalize the research results for the whole intended society. With this point of view, the most standard way of sampling is probability sampling (Marshall 1996:522), which refers to selecting a sample that statistically represents the considered population. In this sampling, the people have equal values and chances of being selected (Green and Thorogood 2004:102). But this is not always desired; actually, the sampling method and goal depend on the research mission and questions. In the qualitative research, the primary goal is not generalization (Corbin and Strauss 2008:319). The subjects in qualitative research usually include different aspects of social life, like values and beliefs. Hence, the kind of generalization that is often aimed at is known as 'analytic generalization' (Maxwell and Chmiel 2014). This generalization is not necessarily accomplished by using a set of techniques or random sampling. This is because for a sample to be really random, the characteristics of the population should be evident, while as a presumption, our information of the population is not complete in a qualitative research. On the other hand, we can only claim that the sample represents the population and that its characteristics have a normal distribution, but it is unlikely that constructs such as beliefs and values have normal distribution. Furthermore, social researchers believe that people have different abilities of understanding and expressing matters; so a random selection of unrelated or less-informed people would not be of any use (Marshall 1996). Therefore, we can say that a random selection is not appropriate for qualitative research, because 'it is not the most effective way of developing an understanding of complex issues relating to human behaviour' (Marshall 1996:523). In a qualitative research, some features other than 'distribution' and 'representativeness' are highlighted; 'richness' usually has more importance. Additionally, all the dimensions (size) of the sample are not previously known in qualitative methods, and more important is the fact that after the progress of the research, the sampling criteria is very likely to change (Tuckett 2004). The other feature of qualitative sampling that can make its intricate essence evident pertains to the belief of qualitative researchers; in spite of the possibility of combining quantitative and qualitative methods of research, the quantitative technics of sampling cannot be used in or combined with qualitative sampling methods (Marshall 1996:522; Sandelowski 1995:182); These features have made qualitative methods difficult to conduct to a great extent, especially in those academies and faculties that know hypothesis testing as the only scientific method for research. These problems at the beginning of a qualitative research and at the time of the research proposal can easily prevent the approval of the research. Hence, this article studies the technical and theoretical dimensions of sampling in qualitative research, and tries to answer two major questions in this field.

1. How can we prepare a sampling plan that can be evaluated in detail before starting to conduct the research, and yet be compatible with the dynamic essence and the theoretical goals of the qualitative method?
2. Can we consider an empirical basis for the estimation of the sample size in qualitative researches?

The purpose of this research in asking these

questions is to present a sampling plan from the beginning that fulfils the normal standards for the approval of proposals, and to be accepted by the jury and the authorizing team in academies and universities. The second target is to keep up with the regulations of the qualitative method and save the hidden values of the qualitative approach, including its empirical and theoretical aspects. The third target, which is considered as a theoretical aim, is to distinguish the purposeful techniques from other strategies that supervise the sampling goals.

The method of the research

This article is actually a report of a sampling in a grounded theory research that contains specific solutions to sampling. The presented results are obtained by the interconnection of two research procedures. The first is the study and extraction of the sampling frame for qualitative research from technical literature, which furthermore contains results of real conducted researches that have been used as empirical and theoretical bases for sampling (literature). But the second and the most important research procedure is the conduction of a grounded theory research and a practical involvement with it. In fact, the results of this research are the solutions that the writers have tested for their consistency with the research's goals, target population, and literature, and for getting suitable answers while conducting a grounded theory research. This is done by studying the different sources, as well as by considering the experienced feedback and practical involvement with the target society and field survey.

The Theoretical Basis and Literature Review

Techniques and Strategies of Sampling in Grounded Theory Research

The phrases 'purposeful' and 'theoretical' are used when talking about sampling in qualitative research. In grounded theory research, there is usually more emphasis on 'theoretical' sampling (besides the 'purposeful' sampling). At an initial glance, these two look alike, but Coyne (1997) believes that we should distinguish between the two. All the sampling types used in qualitative methods can be presumed as purposeful, but most of the time by purposeful sampling, the non-probability sampling techniques such as quota sampling, critical case sampling, maximum variation sampling, snowball (Sandelowski 1995; Noy 2008) and other similar techniques are meant; meanwhile, the core of sampling in a grounded theory research is theoretical sampling—a kind of data collection that is accomplished on the basis of the emerging concepts. Theoretical sampling is a kind of 'data gathering based on evolving concepts. The idea is to look for situations that would bring out the varying properties and dimensions of a concept' (Corbin and Strauss 2008:117). Actually, the next samples are chosen for interviews while conducting part of the study, and thereby form part of the findings. The matter is that the common aspects of the purposeful techniques should not lead to equalizing the goals and the features of the different types of surveys. It should be noted that theoretical sampling has a higher function than mere sampling, and cannot be simply replaced by other techniques. The most important use of theoretical sapling is generating data for testing the emerging theories (Green and Thorogood 2004:103). The purposeful techniques serve the strategies and are generally used in the initial stages of the research. Theoretical sampling is a purposeful sampling, but not every purposeful sampling is 'theoretical' (Coyne 1997:629). That is why it is better that these techniques are separated from the issues that form the sampling goals (strategies). Some of these strategies are mentioned in Table 1.

Corbin and Strauss (2008) have explained sampling in grounded theory with the most details. From Corbin and Strauss's perspective (Strauss and Corbin 1990:224–230; Corbin and Strauss 2008:194–200), sampling has three stages that are formed on the basis of the analysis and the formation of the (grounded) theory.

Sandelowskie's strategies (1995)	Marshall's strategies (1996)	Corbin and Strauss's strategies (2008)
Maximum variation sampling: This method is used very often. The biggest sample sizes can be created through this method. The important issue is that the researcher can decide which kind of variation to reach the maximum based on the aims of the research.	Convenience sampling: This involves the least cost and less time is spent, but it might result in poor-quality data. There is normally a kind of convenience sampling in all studies, because not considering the availability of samples may disturb data gathering.	Open sampling: There are two ways for selecting the samples in this method. The first is selecting the samples based on several of their important features (like maximum variation sampling techniques or sampling from limit states). The second method is sequential sampling from a person or a place, to another person or place (like quota or availability sampling).
Sampling with variation on the target phenomenon: This strategy is also known as phenomenal variation, selective, or criterion sampling. The diversity produced in this sampling provides a kind of 'representativeness of sampling'. The selection and sampling criteria can be defined at the beginning of the research and before the collection and analysis of the data.	Judgement sample: In this method, the researcher chooses the sample that provides him with the most productive data. Maximum variation techniques or sampling from key persons and snowball sampling can be considered under this concept.	Relational sampling: This sampling is conducted when the researcher wants to know how the concepts and the subjects relate to their subordinate concepts and subjects. In the selection of the samples, the researcher looks for events that represent the range, dimensions, or kinds of a concept.
Theoretical variation sampling (analytical): This kind of sampling is conducted on the basis of the results of the research, and is used for testing and evaluating the findings.	Theoretical sampling: The samples are chosen with different degrees of relation to the findings. The samples are used for comparison, evaluation, and interpretation of the results. This method is used in grounded theory research as well as in other interpretational methods.	Differential sampling: This method includes both returning to the previous places and persons and going to new situations. At this stage, the researcher increasingly compares his findings with the new data (from sampling) and evaluates them.

Table 1: Some sampling strategies in qualitative research

Their strategies are parallel to the stages of data analysis in grounded theory research (i.e. open, axial, and selective coding) (Corbin and Strauss 2008:195). In the discussed strategies, the difference of the first strategy from the second and the third is clearly visible. In the first strategy, the goal is normally to explore the field of study, while the latter two strategies are focused on comparing and evaluating the evolving findings. This difference shapes the primary means for the sampling plan in this research.

Sample Size, the Evident Challenge in Sampling

The main challenge for the sampling plan in qualitative research is defining the sample size. The truth is that most resources avoid mentioning numbers for sampling and relate the sample size to the essence of the research and data analysis. Corbin and Strauss (2008:263) believe that the dimensions and the number of samples are not defined and planned primarily because that is not achievable, and relate the sample size to data saturation. There are usually limited implications in the research resources for defining the sample size. For example, it is said that the sample size should reduce with the increase in the depth of the research (Tuckett 2004:48); or noting that the appropriate size is the one that answers the question of the research (Marshall 1996:253). Actually, most of the resources put theoretical conditions for sampling instead of mentioning an amount or a technique for defining the numbers. From these theoretical conditions, the three concepts of 'redundancy,' 'theoretical saturation,' and 'statistically non-representative stratified sampling' have been studied in this research.

The first concept studied is 'redundancy,' which relates to the sampling itself (Tuckett 2004). This means that the sampling continues until the researcher finds that the new samples are characteristically repetitive. In this method, the samples themselves are the criteria for evaluation. The study of this concept is useful to prevent the unreasonable increase of the number of samples. The second method studied, which is the most important method for defining and limiting the sampling, is 'theoretical saturation.' In this method, when it is observed that with the increase of the number of samples there is no more increase in diversity or information and no new data is found from the new samples, the sampling can stop (Corbin and Strauss 2008:263). Theoretical saturation not only emphasizes the data, but more importantly, it is based on the analytical process and the findings of the research. Theoretical saturation relates to the richness of the data more than to its size and form. Yet, some researchers claim that informational redundancy is the same as theoretical saturation (Sandelowski 1995:182). The third method for defining the dimensions of sampling is a kind of quota or typical sampling. It was mentioned earlier that the features of the studied population in a qualitative research are not clear (at least from the intended aspects of the research); yet one of the researchers (Trost 1986) suggests that the sampling can be conducted in categories parallel to the variants considered important by the researcher, in such a way that the selection of a sample with the possible diversity is assured. This method is known as the 'statistically non-representative stratified sampling' (Trost 1986:54). To explain this sampling, Trost (1986) uses an example that is similar to the one expressed here:

Imagine the subject of the research is dwelling; so the researcher can hope to create the adequate diversity by considering some important features (defined by the research goals and questions). The three features of ownership, type of the dwelling place, and income level are considered in the example here (Table 2):

This method has some limitations; the number of samples may become unacceptably high. It is not easy to define the effective factors of classification (stratification). Some of the samples might be meaningless—for instance, an owner of a villa house with low

Row	Features of the type	Type of dwelling	Level of income	Ownership
1	Owner of a villa house with high income	Villa	High	Owner
2	Owner of an apartment house with high income	Apartment		
3	Owner of a villa house with medium income	Villa	Medium	
4	Owner of an apartment house with medium income	Apartment		
5	Owner of a villa house with low income	Villa	Low	
6	Owner of an apartment house with low income	Apartment		
7	Renter of a villa house with high income	Villa	High	Renter
8	Renter of an apartment house with high income	Apartment		
9	Renter of a villa house with medium income	Villa	Medium	
10	Renter of an apartment house with medium income	Apartment		
11	Renter of a villa house with low income	Villa	Low	
12	Renter of an apartment house with low income	Apartment		

Table 2. An example of the statistically non-representative stratified sampling by the three features of ownership, income, and dwelling type (extracted from Trost 1986:56)

income . On the other hand, studying some of the issues such as the level of income might intrude into the main research process and create theoretical problems. Finally, it should be said that using this method can be suitable for research initiation, because it is a factor for considering the possible existing groups in the research field.

But if the theoretical issues (mentioned above) are not adequate for the completion of a research proposal, and we still insist on having the number of samples, we come to numbers with generally empirical aspects. Sandelowski says (1995:179): 'A sample size of 10 may be judged adequate for certain kinds of homogeneous or critical case sampling, too small to achieve maximum variation of a complex phenomenon or to develop theory, or too large for certain kinds of narrative analyses.' Sandelowski (1995) mentions the number 50 as 'large,' because most often when the numbers get as high as this, the samples and types cannot all be studied precisely. The number of the samples should not be too much, as that may cease the assurance of the accurate and detailed study of the data. As per Sandelowskie's view, the suitable size is the amount that facilitates the possibility of in-depth case-oriented analysis, which is the originality indicator of any qualitative research and leads to a new understanding enriched with experience (Sandelowski 1995:183). Another researcher (Blaikie 2010: 352–253) has considered 100 participants and 250 interviews in an example of qualitative research with an abductive strategy. These numbers are considered to be one of the biggest suggested numbers in this field. It should be noted that Blaikie does not men-

tion any special qualitative methods. Additionally, it seems that the task of data gathering is done by a team or a set of assistants besides the researcher himself. In this example, non-probability sampling has been used along with quota, snowball and opportunistic samplings; there has also been an attempt to maintain a gender balance, and an age and social class distribution in the selection. Blaikie says that the purpose is to have the most possible diversity in a group of the studied population (Blaikie, 2010:253). Finally, the most discussable numbers for sampling can be found in Morse's research (1994:225) (Table 3). In this resource, the sample size is defined by the people interviewed (one can be interviewed more than once) for a phenomenological research, by the numbers of interviews for ethnography, and by the numbers of interviews and observations for the grounded theory. The most important presumption for suggesting the numbers is that these researches are done with defined budgets and under specific research institutes (funded researches).

Now, we can consider three sources for defining the sample size. The first is the research features, specially the characteristics of the studied population. The second source is theoretical saturation (and similar concepts), which depends on the essence of the qualitative data and their analysis. The third basis is similar researches (the experience of other researchers), which can be presented as an empirical justification for a reasonable estimation of the sample size.

Demographic concerns

One of the frequently discussed subjects that we need to mention here is demographic distribution. Demographic distribution is an issue that is normally expected to be considered in all samplings. It usually consists of gender, age, and race. The research observers want the research to be of a balanced distribution pertaining to demographical features; in other words, it should not be biased. This emphasis from the observers and the approval jury makes this issue necessary for discussion in the literature on qualitative research. The study of different sources shows that considering the demographic features in the initial stages of sampling can be useful for qualitative research; but in the end, it is usually not operable. It should be noted that a qualitative sampling is purposeful or theoretical. So how can we maintain balance between age and gender while the first findings of the research show that people in specific age or genders have more experience on the study subject? Sandelowski (1995:180) believes that this kind of distribution is not only necessary, but sampling in a qualitative research by the demographic characteristics can create problems in the collection of data and the definition of the sample size. However, the experience of the authors shows that if there is a position that the demographic distribution does not have any conflict with the aims of the qualitative research; it can be used to strengthen the research—i.e. this feature can be considered alongside other features of the studied population in the sampling process.

The findings

The main strategy to answer the two questions discussed in this research is to present a sampling plan that has a dual feature characteristic. The first is enough potentiality to foresee the sampling process and sample detail, and the second is to have adequate flexibility and compatibility with the theoretical purposes of the qualitative research. The potentiality to foresee means presenting evaluable details of

Research type	Approximate sample size	Sampling unit
Phenomenology	6	Participants (individuals)
Ethnography	30-50	Interview
Grounded theory	30-50	Interview, observation

Table 3. The sample size and the sample types in different studies (Morse 1994:225)

the sampling stages. It also means the reasonable estimation of the sample size. But flexibility means considering the different stages of data analysis, specially the evaluation of the research findings. Theoretical and experimental studies show that the first solution to achieve a sampling plan that maintains the mentioned characteristics is dividing the sampling into two stages. This division can be deduced from the strategies suggested by most researchers—for instance, Green and Thorogood (2004). Therefore, the first stage of the sampling is to achieve the maximum variation or to ensure the consistency of all the types (groups in society) being studied, and the second part, as a theoretical sampling, is to evaluate the findings and develop the (grounded) theory. After such a division, the first part can be explained in more detail. The precise definition of the sample size or considering a fixed quota for each class of the sampling population at the start of the sampling is possible; but it should be noted that the sampling process in a grounded theory is sequential or cumulative, and the numerous samples are never taken simultaneously. Either way, mentioning the number of samples or just mentioning the parts of the sampling depends on the views of the supervisors or the research observers.

The first stage of sampling

To form the first stage of sampling, the following features should be looked into and some groups should be considered relatively for the classification of the samples. These criteria suggest the groups and divisions for defining the minimal primary samples.

• In a grounded theory research, we usually face a social process or event in which different social groups are involved. The sampling at the first stage is divided between these groups. For example, if the manner of architecture students' actions is being discussed, the distribution between students of different academic years is obvious.

• If there are samples in a different geographical context, a number or a quota of sampling is allocated for each of the locations. This division can be relative to the extent of importance or the broadness of any of these geographical locations. A small proportion can be allocated to the cultural groups, languages, or the minorities of a society. However, it is necessary to act with preciseness in this case, because the study subject is usually limited to small populations in grounded theory research, and excessive insistence on these differences may divert the research from its main targets.

• One other tool for the distribution of the samples is to use the features related to the research aims and questions. This work is like the method suggested by Trost (1986) explained earlier; however, the difference is that there is no demand for creating all the possible combinations in it. It is better that the researcher only gets confidence in the sampling from each kind, and defers the final number of samples in each kind to theoretical sampling.

• Finally, the most important source to define the sections of the sampling is to use the important events that are expected to be faced during the research as the basis of the sampling. That means the samples and the groups should be used in way that includes important social events. For instance, the sampling from these events can include two sides of a deal or the successful and the failing people in an approach. In this state, there are at least two groups for sampling, like the owner and the renter of a house, or a contractor and an employer. By other means, the sampling is conducted through social events and the existing roles in them. It occurs if the scope of research is related to both or all these events and groups.

In the following, there is a report of a sampling plan prepared by the authors of this article (Table 4). In this report, the researchers had access to two cities of Tabriz in East Azerbaijan province and Shirvan in North Khorasan province (Iran). The primary distribution of the samples in these two cities is basically rooted in the concept of convenience

Type of categorization	Categories	Number of samples in categories
Site of study	Tabriz metropolis	11
	Small city of Shirvan	More than 20
Ethnicity	Assemblage of non-native and speaking different language	More than 10
	Assemblage of native and speaking same language	More than 10
Type of dwelling	Villa-type dwellings	10
	High-density dwellings	10
Career and income	Free career	6
	Employee	10
	Housekeeper and student	2
Population distribution	Female	6
	Male	More than 20
	Under 40 years of age	13
	40 years of age and above (with experience prior to the 1979 revolution of Iran)	9
	Single	3
	Married	18

Table 4: Example of the distribution of the initial sampling (information from some of the participants are not collected due to their refusal or other practical issues)

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(accessibility) (Marshall 1996:523), but it can maintain the adequate diversity for a grounded theory research in a meaningful manner. The city of Tabriz is a metropolis with a history of a complete urban lifestyle, while Shirvan is a low-population city whose inhabitants have been connected with the rural lifestyle. The dominant dwelling types in these two cities also differ to a great extent. While most of the dwellings in Shirvan are villa houses with courtyards, the most common dwelling type in Tabriz is apartments.

Accordingly, the primary plan for the sampling in prenominated research has been mentioned (Table 4). In this table, one sample has multiple features and is classified into several groups—i.e. the overall number of the samples will not be equivalent to the algebraic sum of the numbers of the table. It is an initial suggestion (proposal) and the final number of the samples can be defined at the end of the summarizing and the analysis of the data.

The second stage of sampling

After planning the initial sample, a researcher can elaborately program the second stage of the sampling, which is usually known as theoretical sampling. The greatest tool in this stage of the sampling is 'theoretical saturation', which was discussed earlier. In this part of the sampling, all the epistemological requirements and limitations should be mentioned, but the most important issue to be noted is that the

sampling will not be definite and completed until the end of the research.

Discussion and Conclusion

The investigations show that most of the sources for the grounded theory method, especially those translated into Persian, provide researchers with little information for planning a sample; most of the time, the sample choice is subjected to the features of the research and its findings. As a result, the researchers can merely achieve the criteria for sampling whose results can be presented after the conduction of the research. Following this limitation, the main suggestion of this research is to present a sampling plan that is an evidence of being well-informed about the literature of the subject, and on the other hand, reflect the important characteristics of the population. This suggestion has been expressed via a two-stage plan in response to the main research questions. The elementary view (without the expression of the theoretical issues) of the intended strategy of this research can be observed in the work of some researchers (Kumar et al. 2003).

At the initial stage of the sampling plan, mentioning the sample size can be overlooked in the sampling plan, and may merely define the sampling classes and their role in introducing the characteristics of the studied population. But in case of mentioning the sample size, it is better that the number of samples in the research plan should not be more than the suggested number of Morse (1994), because the purpose is to estimate the most probable sample size (Table 3). In the second stage of sampling, the features of the qualitative research should also be noticed while preparing the sampling plan; while the possibility of an increase in the sample size can be stated at the end of the research in grounded theory study, such a thing is unlikely for phenomenological research. In phenomenological research, it is better for the samples to be homogeneous, because access to inter-subjective or shared experience or perception is intended (Guest 2006:76), and the number of samples is more limited than that which would be able to contain a diverse combination of samples. However, in a grounded theory research, the sampling starts with the aim to increase variety. On the other hand, the kind of data collection can also be important; while the diversity in the samples is considered useful for interviews and observations (especially in grounded theory research), the uniformity of the samples (having common viewpoints) is more useful in group interviews (focus groups) (Morgan 1997).

The final point is that insisting on a detailed sampling plan can turn into a weakness in qualitative research and become the biggest obstacle for the theoretical functions of the sampling, and so it is better to be cautious. That is why research scholars like Tuckett (2004:51) suggest excluding inappropriate people or groups, unavailable people, or those with hearing or speech impairments, special languages or regions, or any special individual or group that is doubtful for making contact with, and instead choose key persons or target suitable groups.

But generally, it is somewhat difficult to know the persons and the appropriate groups before the conduction of the initial stages of the research, and so it would be better to use experts' suggestions for the selection of data; that means to get the help of an expert or a specialist in the subject to introduce appropriate persons. This method can be known as a kind of snowball or a method of taking advantage from specialists for choosing the samples. The supervisors or the observers of the research may be the primary accessible sources in this context.

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