

Developing Sampling Frame for Case Study: Challenges and Conditions

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Abstract

Due to statistical analysis, the issue of random sampling is pertinent to any quantitative study. Unlike quantitative study, the elimination of inferential statistical analysis, allows qualitative researchers to be more creative in dealing with sampling issue. Since results from qualitative study cannot be generalized to the bigger population, qualitative researchers do not have to endure the strenuous randomization process of sampling procedure. However, qualitative researchers should not take sampling procedures too lightly, and if they do, it will affect the richness and the appropriateness of the data. The chances are, the data will not answer their research questions and this can frustrate the researchers when making meanings to the data. This paper will examine the available methods in sampling participants for qualitative study. Specifically, the paper will discuss the sampling frame suitable for case study, such as single-case (holistic and embedded), multi-case, and a snowball or network sampling procedure. Discussion will also involve challenges anticipated for each procedure.

Keywords: *case study; sampling; qualitative sample*

1. Introduction

Qualitative and quantitative researchers approach sampling quite differently. For quantitative researchers, the primary goal for the sampling procedure is to get a representative sample, small number of individuals but representative of the bigger population and produce accurate generalization about the population. Therefore, quantitative researchers are very concern about using specific techniques that will yield highly representative samples and they tend to use a type of sampling frame based on theory of probability. This is known as probability or random sampling. According to Neuman (2009) researchers has two motivations for using probability or random sampling: (1) time and cost effectiveness, and (2) accuracy of the findings. Neuman suggested that “the results of a well-designed, carefully executed probability sampling will produce results that are equally if not more accurate than trying to reach every single person in the whole population” (2009, 195).

The same thing cannot be said for a qualitative study. The elimination of statistical analysis, allows qualitative researchers to be more creative in dealing with sampling issue. They do not have to endure the strenuous randomization process of sampling procedure because the results cannot be generalized to a bigger population, and only analytical generalization can be conducted where a particular set of results is generalized to a broader theory (Yin, 2009). Qualitative researchers focus less on a sample’s representativeness or on detailed techniques for drawing a probability sample (Neuman, 2009). As such, many authors enlightening qualitative approach as research methodology never actually discuss sampling procedures, let alone detailing the exact procedure in choosing research participants or informants (Marshall & Rossman, 2011; Creswell, 2003). The focus has been on how the small sample or small collection of cases, units, or activities, illuminates’ social life or the phenomenon being studied. The primary purpose of sampling for a qualitative researcher is to collect specific cases, events, or actions that can clarify or deepen the researchers understanding about the phenomenon under study. Similarly, their concerned would be to find cases or units of analysis that will enhance what other researchers have learned about a particular social life or phenomenon. If they were the pioneers in the field, the concerned would be to find cases that will help explain deeper their initial understanding about the phenomena that they are studying. For this reason,

qualitative researchers tend to use nonprobability sampling. This paper will examine the available techniques in sampling participants for qualitative study. Specifically, the paper will discuss sampling techniques suitable for case study such as single or multiple-case design and snow balling or networking technique for sampling procedure. Challenges that occur for each procedure will also be discussed.

2. Discussion

2.1 Is My Sampling Frame Big Enough?

Qualitative researchers are not concerned and seldom draw a huge sample from the studied population. Flick (2009) suggested that the individuals or cases are selected as participants for a qualitative study not because they represent their population (and therefore, the issue of generalizability) but owing to their relevance to the research topic. Inevitably, the idea of randomization outmoded the idea of nonprobability sampling or nonrandom sampling. Qualitative researchers rarely determine their sample size prior to their study nor do they have great ideas or vast knowledge about the population they are going to study (if they do, then it will defeat the purpose of doing a qualitative study!) or from which the unit of analysis will be taken from. Concisely, qualitative researchers select their cases gradually, and not limiting the number of selected participants until the data reached saturation point. Glesne and Peshkin (1992) suggested that the number of participants for a qualitative study could be determined by looking at the data during data analysis. If repetition of stories occurs among participants and no new information awarded to the researchers by any new participants, then the data is said to reach a saturation point. The researchers can then stop selecting new participants for their study. The following diagram (Figure 1) describes this.

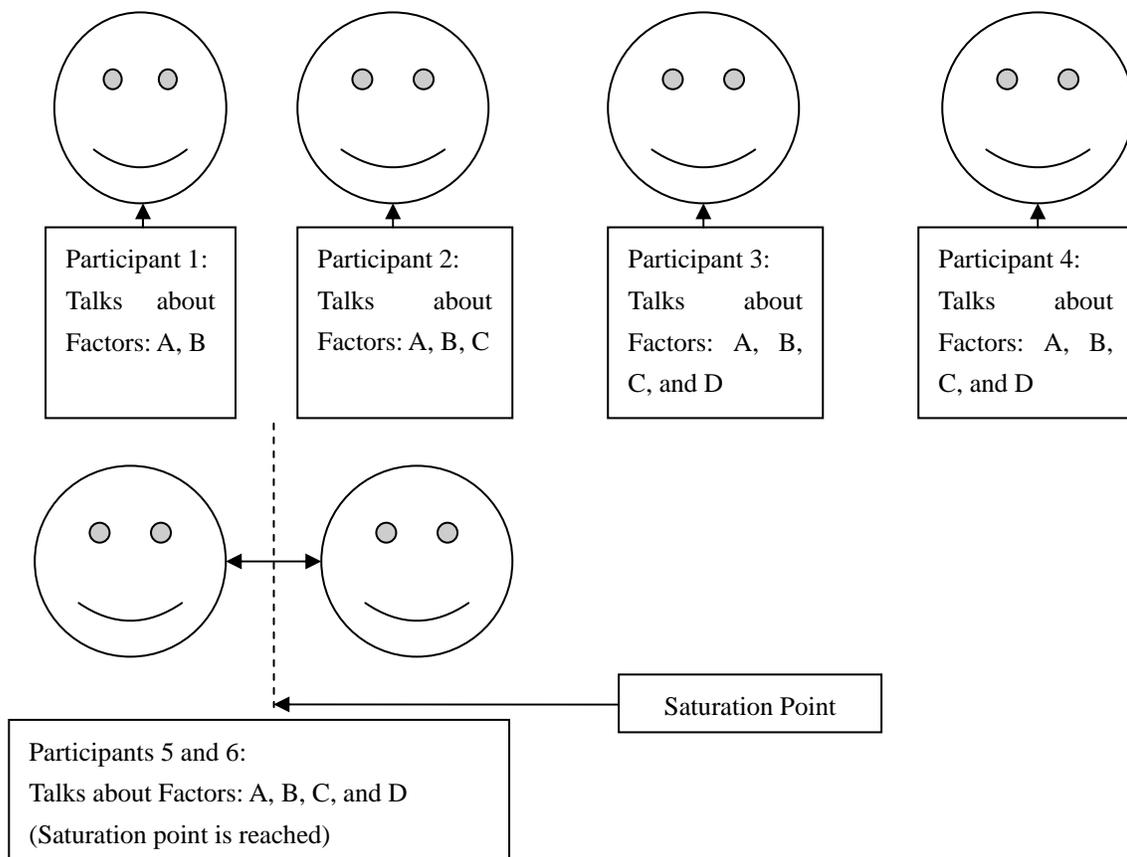


Figure 1. Indicators for Saturation Point

Can the saturation point determine the number of samples that will provide enough data to explain the phenomenon? What happened if the researcher is not able to find the saturation point? The response to both questions will have to depend on the research questions formulated for the study and the interview protocol used to collect the data. Saturation point will not evolve (and therefore, the number of samples will not be able to be determined) if the

interview protocol used is not exhaustively developed. Therefore, the researcher will have to go back to more samples and the new revised interview protocol that encompassed more exhaustive questions. Concomitantly, the interview protocol would have to be in-line with the research questions. The researcher would have to do some reflection process (or develop a memoir) every time a set of data is collected from a sample. This is a continuous analytical process that becomes part of the data analysis procedure and can be quite a cumbersome process. The challenge is for the researcher to develop very comprehensive research questions that will leave no stone unturned. Exploration on every aspect of the phenomenon will have to be reviewed and identified to ensure comprehensiveness of data and manageable number of samples.

2.2 Shall I Just Choose One or Go For More?

Putting the above idea into its perspective, therefore, a single-case study can sometimes be sufficient to explain certain phenomenon, particularly one with critical or classic characteristics. Yin (2009) suggested that single-case study could be the appropriate design under several circumstances.

First, when the single case represents the critical case in testing a well-formulated theory. The theory probably has some specified sets of proposition or assumption that are contained in specified circumstances. Therefore, to confirm, or challenge the theory, these circumstances need to be met. Data from such study can contribute significantly to knowledge and theory-building process. Second, qualitative researchers can choose to have a single-case design, when the case represents an extreme or unique case. Examples of single-case that can be studied are an individual, an organization or a community. A single-case that involves one participant is common in clinical psychology, medical research and even education on specific population (examples: children with special disabilities). To employ such a design, the researcher has to be certain that the phenomenon under study is very rare and the participant that has the specific characteristics is very few and far in between. Third, a single-case study can be the design of choice when it involves revelatory case. Liebow (in Yin, 2009) conducted such study to unfold the everyday lives of an unemployed Blackman. His study brought about some revelation regarding problems faced by the man in a society that denigrate black unemployed man. If other researchers have similar opportunities and can uncover some prevalent phenomenon previously inaccessible to social scientists, such conditions justify the use of single-case study on the grounds of its revelatory nature (Yin, 2009). For the first three examples of single-case design, the challenge is to find the case that meets the characteristics required by the researcher.

When a researcher decides to choose a single-case study and maintains that the phenomenon being studied lies within the single case or the "one unit of analysis", he or she is said to have chosen the holistic single-case design. As mentioned above, the circumstances for choosing this particular design is apparent. However, the complexity of choosing the participant or unit of analysis for single-case design can increase if there exist an embeddedness of other subunits within the case being studied. This again can be a challenge to any qualitative researcher. Hsieh and Shen (1998) conducted example of such study on leadership culture in American school system. Within the leadership culture of the school system lies other subcultures that was determined by the school principals, teachers and superintendents. Each group of individuals is considered as a single unit of analysis. By studying the subculture, the researchers were able to get the overall pictures of the leadership culture of the school system. The example given suggests an embedded single-case design with multiple unit of analysis. Again, in deciding whether to opt for a single-case holistic design or single-case embedded design, the researcher would have to look at his research questions. What kind of information that he or she might needs to explain the phenomenon or what kind of patterns is he or she looking for in the phenomenon would have to be determined by the objectives and the research questions.

A researcher might choose single-case study with single unit of analysis (holistic single-case design) over other method due to its convenience (only one unit of analysis is needed!). Problem might arise when the entire nature of the case study shifts, during the course of the study. The researcher might have orientated his or her study (guided by the initial research questions) in one dimension. However, throughout the study, this orientation took into a different turn, churning new dimensions, with emergence of new information, or new perspective of the phenomenon. What would be the next action? Shall the researcher just accept the new twist and run the risk of not being able to answer his or her research questions or change his method of case study by sampling more participants of similar characteristics? This can be a real challenge for qualitative researcher who employs a single-case holistic design. To avoid such slippage, it would be better for the researcher to have a set of subunits (Yin, 1994) as in a study conducted by Noriah (1999) or to redesign the whole study to involve multiple-case designs. The question to be addressed now is over how to choose the right participants for the study.

2.3 How to Choose More Participants?

The strategy of participant selection in qualitative research rests on the multiple purposes of illuminating, interpreting, and understanding—and on the researcher's own imagination and judgment (Glesne & Peshkin, 1992). A variety of non-probability sampling techniques can be employed in qualitative study for the selection purposes. Techniques such as haphazard, accidental, or convenient sampling are easier to employ but more often than not, these techniques can produce ineffective, highly unrepresentative samples. Therefore, they are not recommended even for qualitative study, which do not emphasize on generalizability of data towards the bigger population. However, quota sampling is the improve version of the haphazard, accidental approach (Neuman, 2009). This sampling approach is suitable when a researcher would like to interview a group of individuals with different characteristics, thereby, ensuring some differences in the sample. This is similar to stratified sampling commonly associated with a quantitative study, and is highly recommended for embedded single-case design when the unit of analyses is individuals of different characteristics, clustered under one group (organization, community etc.).

Purposive or judgmental sampling is the more acceptable sampling procedure for qualitative research, particularly, when it involves selecting participant for special situations. This sampling procedure uses the judgment of an expert in selecting cases or the researcher selects cases with a specific purpose in mind. Purposive sampling is useful for case study in three situations: (1) when a researcher wants to select unique cases that are especially informative, (2) when a researcher would like to select members of a difficult-to-reach, specialized population, and (3) when a researcher wants to identify particular types of cases for in-depth investigation. The purpose is to gain deeper understanding of those particular types of cases (Neuman, 2009), and not to generalize the findings. Since generalization (and not analytical generalization) is not an issue, the selection of participants can be conducted nonrandom. Examples of such sampling procedure can be found in the work of Rosnanaini (2003) and Zaharah (2002) in their doctoral theses. Both researchers select their cases with a specific purpose. Rosnanaini only chooses teachers who used critical thinking in their teaching, while Zaharah, who was looking at administrative styles among head of schools or dean, only selects a group of deans from a local university. Noriah (1999) who investigated attachment patterns of Malaysian students studying in the United States, on the other hand, used purposive sampling to gain in-depth knowledge on the issue, and to understand the patterns that emerge from the students' interaction with their parents and peers. Therefore, participants selected for her study, have characteristics that meet the purpose of the study. Similarly, Wineburg (1991), who explored how people evaluate primary and secondary sources when considering questions of historical evidence, selected his participants among historian with doctoral degree or at least a doctoral candidate majoring in history. Therefore, his selection is based on the ability of the participants to provide information on the said issue.

Other sampling procedures suggested by Neuman (2009) are: deviant case sampling, sequential sampling and theoretical sampling. The first sampling procedure is applicable when a researcher seeks cases that differ from the dominant patterns or that differ from the predominant characteristics of other cases. When a social scientist wishes to study daily activities of a school age Siamese twin children with Down syndrome, he or she would have to seek children that do not fall into the normal school age group. These children would have to meet all the characteristics of the Siamese twin and Down syndrome children. Although, deviants sampling sound similar to purposive sampling, the goal of the sampling procedure differs. Its main function is to locate a collection of unusual, different, or peculiar cases that are not representative of the whole. The deviant cases are selected because they are unusual, and a researcher would hope to learn something from the participants outside what is considered general patterns. The second sampling procedure is also similar to purposive sampling with only one difference. In sequential sampling, a researcher continues to gather cases until the amount of new information reach saturation point, and not until his personal resources depleted. The third sampling process is more suitable for researcher who wishes to employ grounded theory as the research design. Samples are selected carefully, and the selection is based on the development of the theory. Concomitantly, a growing theoretical interest guides the selection of sample cases. The researcher selects cases based on new insights gathered from the data that is analyzed simultaneously with selection of samples. The authors would like to remind readers that the above sampling procedures are conducted in a nonrandom fashion. Therefore, issues of sampling bias and generalization of data to the bigger population will be a problem that needs to be tackled by the qualitative researchers.

Can a bias actually occur in qualitative research when researchers select their participants using nonrandom sampling procedure? The answer to such question can tantamount to stage fright for some quantitative researchers. However, bearing in mind that the researcher is the most important tool in any qualitative research (Glesne & Peshkin, 1992), they will have to ensure that every selected participants will help provide the raw data needed to answer the research questions. Inevitably, the decision to select or not to select a particular individual or group of individuals, or even

organization as unit of analysis lies in the hand of the qualitative researchers. They play the vital role in the selection process. If the selection is conducted carelessly, the data collected will most probably be less meaningful. If the process is conducted otherwise, the vast amount of data collected will garner beautiful meaning to the phenomenon being studied, and the role of the researcher as an interpretivist will shine.

2.4 Snowball or Network Technique

Researcher, who would like to select participants from various stratified groups, and at the same time maintaining the nonbiased stand in the selection process, can opt for snowball or network technique (also referred as chain referral or reputational sampling). The word nonbiased here will have to be used with some caution. How, why and where the snowball will be rolled, again depends on the researcher and what he or she is looking for. If clean snow is required to make the snowman, then the maker would have to look for clean, fresh snow. Subsequently, dirty snow will destroy the quality of the snowman. This analogy is applicable to the snowball technique employed in qualitative research. According to Gleshne and Peshkin (1992) a researcher who wish to use such technique will have to make the initial contact (using the first snowball) and use recommendation to work out from there.

As the snowball rolled it will get bigger, and so do the number of participants selected for the study. Neuman (2009) suggests that snowball sampling is a multistage technique. It begins with one or a few people or cases and spreads out based on links to the initial cases (as shown by Figure 2). The question is how can a researcher who employs such sampling technique be certain that the group will not be too big for him or her to handle? (When the initial snowball is roll out onto the wet snow, the person who is doing it can forget that it will grow bigger and heavier, until it is too late, and the person gets overwhelmed by the big snowman!). With this sampling technique, can the researcher see the finishing line to the number of participants selected for his or her study? A thing to remember is that, in snowball or network-sampling technique, each person in the sample is directly or indirectly tied to the original sample, and several people may have named the same people. A researcher can eventually stops the selection process when, no new names are given, indicating a closed network, or because the network is so large that it is at the limit of what he or she can study (Neuman, 2009).

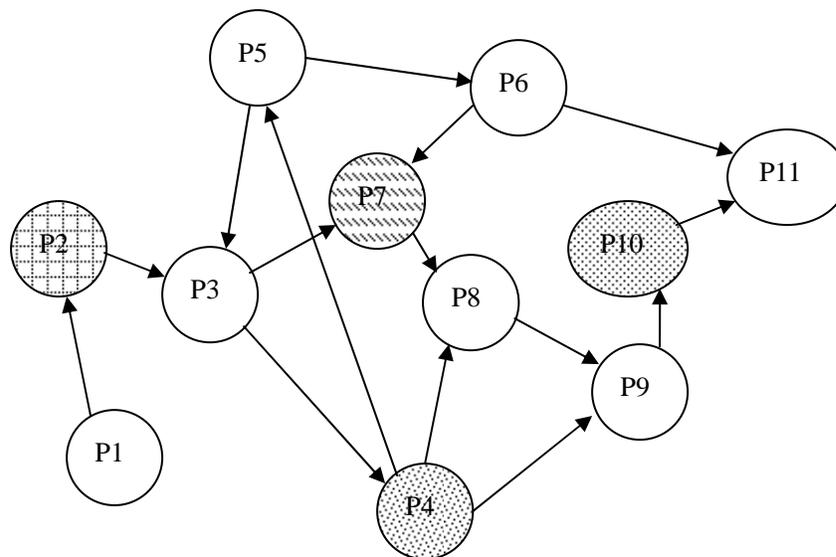


Figure 2. Snowball or Network Sampling

Kim (1996) used a good example of snowball technique in her study of friendships and student-faculty relationship among Korean international students. She started (and interviewed) one final year undergraduate Korean students and ended with 36 other Korean International students. Imagine the amount of vast data collected that need to be analyzed. This can mean a postponement of doctoral graduation! It is also interesting to note that, for snowball sampling procedure, a researcher can also start the ball rolling with more than one participant. Each participant will then introduce others, and each group will then grow independently until at one point where the three groups will meet. Such a start will help increase the number of participants at a faster rate, thereby making it more time effective. A word of caution would be to make sure that the number of participants selected for the study be maintained at a

manageable number (and again, this can be another challenge), because an overwhelmed researcher will just give up when analyzing a humungous amount of data.

2.5 External Validity and Sampling

One of the criteria for judging the quality of research designs is by establishing the domain to which a study's finding can be generalized, and thereby addressing the issue of external validity. According to Yin (2009), external validity problem has been a major barrier in doing case studies, particularly for single-case study and "critics typically state that single case offer a poor basis for generalizing" (p.36). However, equating a single case design to cross sectional design is preposterous. Data from the earlier design is not meant to be generalized to a larger universe, and will not be treated with statistical analysis that provides some probability value that renders the data applicable to other population. The "sample" picked (although rigorously done) cannot and will not be representative of the larger population. Whatever the sample will be, it only represents itself and the phenomenon studied by the researcher. As mentioned earlier, one salient theme to remember is that case studies rely on analytical generalization, in which the researcher strive to generalize a particular sets of data to a broader theory. Noriah (1999) shows this process through her study on analysis of attachment theory on Malaysian students. In-depth interview and observations conducted during this study was analyzed using constant comparative method, and data collected was compared to the theory to help explain the attachment patterns of those late adolescents, and not any other Malaysian adolescents.

Bearing in mind that generalization process within case studies is not automatic, a theory must be tested through replications of the findings in a second, third, fourth or even fifth samples or participants, where the theory has specified that similar result should occur. According to Yin (2009, 36) "once such replication has been made, the results might be accepted for a much larger number of similar individuals, even though further replications have not been performed". Yin further describes this process of developing evidence for external validity as using replication logic, where the replication lies on the sampling frame. The higher the number of replication, the more valid the data will be. Inevitably, this will help explain the phenomenon for a bigger group of individuals (but not to generalized to the population). To achieve such effect, a multiple-case study would be commendable where multiple cases (participants or samples) can be selected using snowball or network technique.

3. Conclusion

Challenges in developing sampling frame for case study need to be analyzed from a number of factors. Such factors as: objectives of the study, the sampling design that allows for nonbiased selection of samples (if it becomes an issue) and the issue of generalization of data to the bigger population (evidence of external validity) need scrutiny when developing sampling frame for a qualitative study. Many authority figures in qualitative study indicated an existence of bias in a sampling procedure for any qualitative study (Gleshne & Peshkin, 1992; Marshall & Rossman, 2011). However, the writers believe that by reducing the biases a researcher will be able to gather raw data that is free from researcher's influence and subsequently, only explain the phenomenon under study.

The question of random sampling for qualitative study should not arise because data collected from such study is not meant to be generalized towards a bigger universe. In particular for a case study, the data is meant to describe and to explain the phenomenon experience by the samples or participants of the study. The only challenge for the researcher is, to ensure that there are enough participants to help explain the phenomenon (and of course, a comprehensive research questions and the right protocol to help answer the research questions). If a participant originally selected for a single-case study provides data that bring a new twist to the study, the researcher can command a change of new case study design and therefore a new sampling procedure.

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