Sampling Decisions in the Research Process

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Abstract : *The issue of sampling is at different stages in the research process. In an interview study, it is connected to the decision about which persons you will interview (case sampling) and from which groups these should come (sampling groups of cases). Furthermore, it emerges with the decision about which of the interviews should be further treated; that is, transcribed and analyzed (material sampling). During interpretation of the data, the question again arises when you decide which parts of a text you should select for interpretation in general or for particular detailed interpretations (sampling within the material). Finally, it arises when presenting the findings: which cases or parts of text are best to demonstrate your findings (presentational sampling)?*

In the literature, various suggestions have been made for the problem of sampling. But quite unambiguously, they are located at two poles : on more or less abstract or concrete criteria.

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A Priori Determination of the Sample Structure :

At one pole, criteria are abstract insofar as they start from an idea of the researched object's distribution. This should be represented in the sample of the material, which you study (i.e., collect and analyze) in a way that you allow yourself to draw the inference of the relations in the object. This is the logic of statistical sampling in which material is put together according to certain (e.g. demographic) criteria. For example, you draw a sample that is homogeneous in age or social situation (women with a certain profession at a specific biographical stage) or a sample representing a certain distribution of such criteria in the population. These criteria are abstract, because they have been developed independently of the concrete material analyzed and before its collection and analysis, as the following examples show.

Case Study on Sampling with Social Groups Defined in Advance :

In my study on the social representation of technological change in everyday life, I took three starting points. One was that the perceptions and evaluations of technological change in everyday life are dependent upon the profession of the interviewee. The second was that they depend on gender as well, and the third that they are influenced by cultural and political contexts.

In order to take these factors into account, I defined several dimensions of the sample. The professions of information engineers (as developers of technology), social scientists (as professional users of technology), and teachers in human disciplines (as everyday users of technology) should be represented in the sample by cases with a certain minimum of professional experience. Male and female persons should be integrated. I took the different cultural backgrounds into account by selecting cases from the contexts of West Germany, East Germany, and France. This led to a sample structure of nine fields which I filled as evenly as possible with cases representing each group. The number of cases per field depends on the resources (how many interviews could be conducted, transcribed, and interpreted in the time available?) and on the goals of my study (what do the individual cases or the totality of the cases stand for?).

This example shows how you can work with comparative groups in qualitative research that have been defined in advance, not during the research process or the sampling process.

Sampling cases for data collection is oriented towards filling the cells of the sample structure as evenly as possible or towards filling all cells sufficiently. Inside the groups or fields,

theoretical sampling (see below) may be used in the decision as to which case to integrate next.

Complete Collection :

Gerhardt applied an alternative method of sampling. She used the strategy of complete collection (1986, p. 67):

> In order to learn more about events and courses of patients' careers in chronic renal failure, we decide to do a complete collection of all patients (male, married, 30 to 50 years at the beginning of the treatment) of the five major hospitals (real units) serving the south-east of Britain.

Sampling is limited in advance by certain criteria: a disease, a specific age, a specific region, a limited period and a particular marital status characterize the relevant cases. These criteria delimit the totality of possible cases in such a way that all the cases may be integrated in the study. But here, as well, sampling is carried out because virtual cases which do not meet one or more of these criteria are excluded in advance. It is possible to use such methods of sampling mainly in regional studies.

In research designs using a priori definitions of the sample structure, you take sampling decisions with a view to selecting cases or groups of cases. In complete collection, the exclusion of interviews already done will be less likely in that data collection and analysis is aimed at the keeping and integration of all cases available in the sample. Thus, while the sampling of materials is less relevant, questions about sampling in the material (which parts of the interview are interpreted more intensely, which cases are contrasted?) and about sampling in presentation are as relevant as in the method of gradual definition of the sampling structure.

What Are the Limitations of the Method?

In this strategy, the structure of the groups taken into account is defined before data collection. This restricts the range variation in the possible comparison. At least on this level, there will be no real new findings. If the development of theory is the aim of your study, this form of sampling restricts the developmental space of the theory in an essential dimension. Thus, this procedure is suitable for further analyzing, differentiating and perhaps testing assumptions about common features and differences between specific groups.

Gradual Definition of the Sample Structure: Theoretical Sampling :

Gradual strategies of sampling are mostly based on theoretical sampling developed by Glaser and Strauss (1967). Decisions about choosing and putting together empirical material (cases,

groups, institutions, etc.) are made in the process of collecting and interpreting data. Glaser and Strauss describe this strategy as follows :

> Theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory. (1967, p. 45)

Sampling decisions in theoretical sampling may start from either of two levels: they may be made on the level of the groups to be compared or they may directly focus on specific persons. In both cases, the sampling of concrete individuals, groups, or fields is not based on the usual criteria and techniques of statistical sampling. You would employ neither random sampling nor satisfaction to make a sample representative. Rather, you select individuals, groups, and so on according to their (expected) level of new insights for the developing theory in relation to the state of theory elaboration so far. Sampling decisions aim at that material that promises the greatest insights, viewed in the light of the material already used, and the knowledge drawn from it. The main questions for selecting data are : "What groups or subgroups do one turn to next data collection? And for what theoretical purpose? ... The possibilities of multiple comparisons are infinite, and so groups must be chosen according to theoretical criteria." (1967, p. 47).

Given the theoretically unlimited possibilities of integrating further persons, groups, cases, and so on it is necessary to define criteria for a well-founded limitation of the sampling. These criteria are defined here in relation to the theory. The theory developing from the empirical material is the point of reference. Examples of such criteria are how promising the next case is and how relevant it might be for developing the theory.

An example of applying this form of sampling is found in Glaser and Strauss's (1965) a study on awareness of dying in hospitals. In this study, the authors did participant observation in different hospitals in order to develop a theory about how dying in hospital is organized as a social process. The memo in the following case study describes the decision and sampling process.

Case Study Example of Theoretical Sampling :

The pioneers of grounded theory research, Glaser and Strauss, developed theoretical sampling during their research in Medical Sociology in the 1960s. They describe in the following passage how they proceeded in theoretical sampling:

Visits to the various medical services were scheduled as follows : I wished first to look at services that minimized patient awareness (and so first looked at a premature baby service

and then at a neurosurgical service where patients were frequently comatose). Next I wished to look at the dying in a situation where expectancy of staff and often of patients was great and dying was quick, so I observed on an Intensive Care Unit. Then I wished to observe on a service where staff expectations of terminality were great but where the patient's might or might not be, and where dying tended to be slow. So I looked next at a cancer service. I wished then to look at conditions where death was unexpected and rapid, and so looked at an emergency service. While we were looking at some different types of services, we also observed the above types of services at other types of hospitals. So our scheduling of types of service was directed by a general conceptual scheme – which included hypotheses about awareness, expectedness, and rate of dying – as well as by a developing conceptual structure including matters not at first envisioned. Sometimes we returned to services after the initial two or three or four weeks of continued observation, in order to check upon items which needed checking or had been missed in the initial period. (Glaser and Strauss 1967, p. 59)

This example is instructive as it shows how the researchers went step by step in constructing their sample in the contact with the field while they collected their data.

A second question, as crucial as the first, is how to decide when to stop integrating further cases. Glaser and Strauss suggest the criterion of "theoretical saturation" (of a category etc.): "The criterion for judging when to stop sampling the different groups pertinent to a category is the category's theoretical saturation. Saturation means that no additional data are being found whereby the sociologist can develop properties of the category" (1967, p. 61). Sampling and integrating further material is finished when the "theoretical saturation" of a category or group of cases has been reached (i.e., nothing new emerges any more).

Table highlights the theoretical sampling in the comparison with statistical sampling.

Case Study on Gradual Integration of Groups and Cases :

In my study of the role of trust in therapy and counseling, I included cases coming from specific professional groups, institutions, and fields of work. I selected them step by step in order to fill the blanks in the database that became clear according to the successive interpretation of the data incorporated at each stage. First, I collected and compared cases from two different fields of work (prison verses therapy in private practice). After that I integrated a third field of work (socio-psychiatric services) to increase the meaningfulness of the comparisons on this level. When I interpreted the collected material, sampling on a further dimension promised additional insights. I extended the range of professions in the study up to that point (psychologists and social workers) by a third one (physicians) to further elaborate the differences of viewpoints in one field of work (socio-psychiatric services).

Finally, it became clear that the epistemological potential of this field was so big that it seemed less instructive for me to contrast this field with other fields than to systematically compare different institutions within this field. Therefore, I integrated further cases from other socio-psychiatric services (see Table, in which the sequence and order of the decisions in the selection are indicated by the letters A to C).

This example illustrates how you can develop a sample and a sample structure step by step in the field while collecting your data.

In the end, you can see that the use of this method leads to a structured sample as well as the use of the method of statistical sampling does. However, you will not define the structure of the sample here before you collect and analyze them and complete it by new dimensions or limited to certain dimensions and fields.

Gradual Selection as a General Principle in Qualitative Research :

If we compare different conceptions of qualitative research in this respect, we can see that this principle of selecting cases and material has also been applied beyond Glaser and Strauss. The basic principle of theoretical sampling is to select cases or case groups according to concrete criteria concerning their content instead of using abstract methodological criteria. Sampling proceeds according to the relevance of cases instead of their representativeness. This principle is also characteristic of related strategies of collecting data in qualitative research.

On the one hand, parallels can be drawn with the concept of "data triangulation" in Denzin (1989b), which refers to the integration of various data sources, differentiated by time, place, and person Denzin suggests studying "the same phenomenon" at different times and places and with different persons. He also claims to have applied the strategy of theoretical sampling in his own way as a purposive and systematic selection and integration sampling in his own way as a purposive and local setting. The extension of the sampling procedure to temporal and local settings is an advantage of the system of access in Denzin's method compared to that of Glaser and Strauss. In the example just mentioned, I took this idea into account by purposively integrating different institutions (as local settings) and professions and by using different sorts of data.

Znaniecki (1934) put forward analytic induction as a way of making concrete and further developing theoretical sampling. But here attention is focused less on the question of which cases to integrate into the study in general. Rather this concept starts from developing a theory (pattern, model, and so on) at a given moment and state and then specifically looking for and analyzing deviant cases (or even see groups). Whereas theoretical sampling mainly

aims to enrich the developing theory, analytic induction is concerned with securing it by analyzing or integrating deviant cases. Whereas theoretical sampling wants to control the process of selecting data by the emerging theory, analytic induction uses the deviant case to control the developing theory. The deviant case here is a complement to the criterion of theoretical saturation. This criterion remains rather indeterminate but is used for continuing and assessing the collection of data. In the example mentioned above, cases were minimally and maximally contrasted in a purpose was instead of applying such strategies starting from deviant cases.

This brief comparison of different conceptions of qualitative research may demonstrate that the basic principle of theoretical sampling is the genuine and typical form of selecting material in qualitative research. This assumption may be supported by reference to Kleining's (1982) idea of a typology of Social Science methods. According to this idea, all research methods have the same source in everyday techniques; qualitative methods are the first and quantitative methods are the second level of abstraction from these everyday techniques. If this is applied analogously to strategies for selecting empirical material, theoretical sampling (and basically related strategies as mentioned before) is the more concrete strategy and is closer to everyday life. Criteria of sampling like being representative for a population and so on are the second level of abstraction.

This analogy of levels of abstraction may support the thesis that theoretical sampling is the more appropriate sampling strategy in qualitative research, whereas classical sampling procedures remain oriented to the logic of quantitative research. To what extent the latter should be imported into qualitative research has to be checked in every case. Here we can draw parallels with the discussion about the appropriateness of quality indicators (see Chapter 28).

Purposive Sampling :

Gradual selection is not merely the original principle of sampling in various traditional approaches in qualitative research. More recent discussions which describe strategies for how to proceed with purposive sampling by selecting cases and empirical material; taken it up again repeatedly. In the framework of evaluation research, Patton (2002) contrasts random sampling in general with purposive sampling and makes some concrete suggestions:

- One is to integrate purposively extreme or deviant cases. In order to study the functioning of a reform program, particularly successful examples of realizing it are chosen and analyzed. Or cases of failure in the program are selected and analyzed for

the reasons for this failure. Here the field under study is disclosed from its extremities to arrive at an understanding of the field as a whole.

- Another suggestion is to select particularly typical cases (i.e., those cases in which success and failure are particularly typical for the average or the majority of the cases). Here the field is disclosed from inside and from its center.

- A further suggestion aims at the maximal variation in the sample – to integrate only a few cases, but those which are as different as possible, to disclose the range of variation and differentiation in the field.

- Additionally, cases may be selected according to the intensity with which the interesting features, processes, experiences and so on are given or assumed in them. Either cases with the greatest intensity are chosen or cases with different intensities are systematically integrated and compared.

- The selection of critical cases aims at those cases in which the relations to be studied become especially clear (e.g., in the opinion of experts in the field) or which are particularly important for the functioning of the program to be evaluated.

- It may be appropriate to select a politically important or sensitive case in order to present positive findings in evaluation most effectively, which is an argument for integrating them. However, where these may endanger the program as a whole, due to their explosive force, they should rather be excluded.

- Finally, Patton mentions the criterion of convenience, which refers to the selection of those cases that are the easiest to access under given conditions. This may simply be to reduce the effort. However, from time to time it may be the only way to do an evaluation with limited resources of time and people.

In the end, it depends on these strategies of selection and how you can generalize your results. In random sampling, this may be greatest whereas in the strategy of least effort, mentioned last, it will be most restricted. However, it must be noted that generalization is not in every case the goal of a qualitative study, whereas the problem of access may be one of the crucial barriers.

Correspondingly, Morse (1998, p. 73) defines several general criteria for a "good informant." These may serve more generally as criteria for selecting meaningful cases (especially for interviewees). They should have the necessary knowledge and experience of the issue or object at their disposal for answering the questions in the interview or – in observational studies – for performing the actions of interest. They should also have the capability to reflect

and articulate, should have time to be asked (or observed) and should be ready to participate in the study. If all these conditions are fulfilled, this case is most likely to be integrated into the study.

Integrating such cases is characterized by Morse as primary selection, which she contrasts with secondary selection. The latter refers to those cases that do not fulfil all the criteria previously mentioned (particularly of knowledge and experience), but are willing to give their time for an interview. Morse suggests that one should not invest too many resources in these cases (e.g. for transcription or interpretation). Rather, one should only work with them further if it is clear that there really are not enough cases of the primary selection to be found. It summarizes the sampling strategies discussed.

Sampling Strategies in Qualitative Research :

- A priori determination
- Complete collection
- Theoretical sampling
- Extreme
- Case sampling
- Typical case sampling
- Maximal variation sampling
- Intensity sampling
- Critical case sampling
- Sensitive case sampling
- Convenience sampling
- Primary selection
- Secondary selection

Width or Depth as Aims of Sampling :

What is decisive when you choose one of the sampling strategies just outlined, and for your success in putting together the sample as a whole, is whether it is rich in relevant information. Sampling decisions always fluctuate between the aims of covering as wide a field as possible and of doing analyses which are as deep as possible. The former strategy seeks to represent the field in its diversity by using as many different cases as possible in order to be able to present evidence on the distribution of ways of seeing or experiencing certain things. The latter strategy seeks to further permeate the field and as structure by concentrating on single examples or certain sectors of the field.

Considering limited resources (people, money, time etc.) you should see these aims as alternatives rather than projects to combine. In the example mentioned above, the decision to deal more intensively with one type of institution (socio-psychiatric services) and due to limited resources, not to collect or analyze any further data in the other institutions, was the result of weighing width (to study trust in counselling in as many different forms of institutions) against depth (to proceed with the analyses in one type of institution as far as possible).

Case Constitution in the Sample :

In this context, the question arises of what is the case that is considered in a sample and more concretely, what this case represents. In these studies of trust in counselling and technological change that I have already mentioned several times, I treated the case as a case: sampling as well as collecting and interpreting data proceeded as a sequence of case studies. For the constitution of the sample in the end, each case was representative in five respects:

- The case represents itself. According to Hildenbrand, the "single case dialectically can be understood as an individualized universal" (1987, p. 161). Thus, the single case is initially seen as the result of specific individual sociolization against a general background (e.g. as physician or psychologists with a specific individual biography against the background of the changes in psychiatry and in the understanding of psychiatric disorders in the 1970s and 1980s). This also applies to the socialization of an information engineer against the background of the changes in information science and in the cultural context of each case. This socialization has led to different, subjective opinions, attitudes and viewpoints, which can be found in the actual interview situation.

- In order to find out what the "individualized universal" here concretely means, it proved to be necessary to also conceptualize the case as follows. The case represents a specific institutional context in which the individual acts and which he or she also has to represent to others. Thus, the viewpoints in subjective theories on trust in counselling are influenced by the fact that the case (e.g., as doctor or social worker) orients his or her practices and perceptions to the goals of the institution of "socio-psychiatric services." Or he or she may even transform these viewpoints into activities with clients or statements in the interview, perhaps in critically dealing with these goals.

- The case represents a specific professionalization (as doctor, psychologist, social worker, information engineer, etc.), which he or she has attained and which is represented in his or her concepts and ways of acting. Thus, despite the existence of teamwork and co-operation in the institution, it was possible to identify differences in the ways professionals from the same socio-psychiatric services presented clients, disorders and starting points for treating them.

- The case represents a developed subjectivity as a result of acquiring certain stocks of knowledge and of evolving specific ways of acting and perceiving.

- The case represents an interactively made and make-able context of activity (e.g. counselling, developing technology).

Sampling decisions cannot be made in isolation. There is no decision or strategy which is right per se. The appropriateness of the structure and contents of the sample and thus the appropriateness of the strategy chosen for obtaining both, can only be assessed with respect to the research questions of the study: which and how many cases are necessary to answer the questions of the study? The appropriateness of the selected sample can be assessed in terms of the degree of possible generalization, which is striven for. It may be difficult to make generally valid statements based only on a single case study. However, it is also difficult to give deep descriptions and explanations of a case which was found by applying the principle of random sampling. Sampling strategies describe ways of disclosing a field. This can start from extreme, negative, critical, or deviant cases and thus from the extremities of the field. It may be disclosed from the inside, starting from particularly typical or developed cases. It can be tapped by starting from its supposed structure – by interesting cases as different as possible in their variation. The structure of the sample may be defined in advance and filled in through collecting data, or it may be developed and further differentiated step by step during selection, collection and interpretation of material. Here, in addition, the research question and the degree of generalization one is seeking should determine the decision between defining in advance and gradually developing the sample.

Conclusion & Suggestions :

In qualitative research, sampling is a very important step. Sampling decisions (who or which group next?) are often taken during and as a result of data collection and analysis. The characteristics of qualitative research mentioned are also applied to sampling strategies. Implicit in the selection made in sampling decisions resides a specific approach to understanding field and the selected cases. In a different strategy of selection, the

understanding would be different in its results. As sampling decision start from integrating concrete cases, the origin of reconstructing cases is concretely realized. In sampling decisions, the reality under study is constructed in a specific way: certain parts and aspects are highlighted and others are phased out. Sampling decisions determine substantially what empirical material in the form of text becomes and what is taken available texts concretely and how it is used. Sampling decisions in qualitative research are often taken on a substantial, concrete level rather than on an abstract and formal level : they may be based on purposeful decisions for a specific case rather than random sampling, in sampling, you will construct the cases you study in your research.

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