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SAMPLING FRAMEWORK FOR PERSONAL INTERVIEWS IN QUALITATIVE RESEARCH

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ABSTRACT

Today qualitative sampling is based on judgement of individual researchers unlike quantitative research which uses time tested statistical models to arrive at appropriate sample size. To compound the problem, various disciplines under qualitative research recommend sample sizes based on opinions of 'gurus' or experts. Consequently, Qualitative researchers find it challenging to justify validity and reliability of their findings. The paper is based on extensive review and analysis of methodologies used to arrive at appropriate sample size. This paper attempts to provide a framework by aggregating several sampling approaches. As a result, the issue of sample size, which till now was judgmental or opinion based, becomes more scientific. By leveraging several approaches, qualitative researchers are in a stronger footing when it comes to justifying sample size and research findings.

I. Introduction

In any research project choosing a right sample size is critical to ensure validity and reliability of research outcomes. However, the issue of sample size poses challenges and constraints for a qualitative researcher as there is no scientific

method to determine the sample size as the sample size is a function of the study objectives. To a large extent, random sampling is used in quantitative research. The other feature of quantitative sampling is that the sample size is defined at the beginning of the research and remains constant (Creswell, 2015). In contrast, sampling in qualitative research is less direct, as sampling in qualitative research involves a sequence of decisions, to be made by the researcher, throughout the research journey (Emmel 2013).

Till a few years ago, gap between qualitative and quantitative study designs and methodological approaches was seen to be significantly large and these gaps have been discussed extensively by Johnson (1990). Johnson, explanations represents diverse point of views covering epistemological and inferential imperatives from around 1990 till the turn of the century. In the last couple of decades, or two, qualitative research has become much more robust in terms of methodology, sampling or analysis. This new robustness has narrowed the gap between qualitative and quantitative research and given researchers the flexibility to transition from qualitative to quantitative research or vice-versa. The strengthening of qualitative research has also resulted in the development of hybrid research designs. These hybrid designs leverage the strengths of each method and take the edge off the limitations of each approach (Bernard, 2011; Creswell, 2009).

Every researcher, especially in qualitative research is vexed at the thought of answering a simple question. How large should a qualitative sample size be? The question ‘How many qualitative interviews is enough?’ was posed to several renowned social scientists across epistemological and disciplinary positions. The answers to this question were diverse, non-conclusive and ranged from “well...it depends!” to “no reasonable answer” (Baker & Edwards, 2012).

Researchers, consequently, refer to indicative guidelines or suggestions shared by experts (Sandelowski, 1995; Charmaz, 2006; Guest, Bunce & Johnson, 2006; Creswell, 2013; Bernard, 2000; Morse, 1994;). The key concern is that these guidelines and suggestions are often treated as authoritative standards rather than as broad guidelines (Morse, 2000).

Another set of social scientists stated that in any qualitative research the size of the sample is a function of the purpose of the research or the research objectives, the research questions posed, as well as the methodology (Mason 2010).

It is also impossible to ignore the fact that researchers also need practical guidance to determine sample size to ensure rigour and maintain standards, in qualitative research. Sample size determination, in qualitative research, is essential to (a) develop proposals for funded research (b) to plan for resource as well as budget allocation (c) generate proposals for review, by institutions and (d) to enable the implementation qualitative research that can be deemed to be robust. To ensure an empirical foundation to a sampling, researchers also need

to examine the diverse range of sampling practices published in qualitative studies.

II. Review of Literature

Emmel (2013), notes that sampling in qualitative research is less direct as it involves a sequence of decisions, to be made, throughout the research journey. Another key feature of is that the research questions are focussed on the study of the phenomenon, in question. The role of the researcher is to interpret and explain the phenomenon. In the case of qualitative research, the researcher is not concerned about generalisation from the sample to the population (Maxwell, 2013). As a result, sampling, does not take into account opinions that are representative. The emphasis is always on information adequacy or to be more specific information richness. Consequently, more than largeness of sample size, sample adequacy and sample appropriateness become extremely important in qualitative sampling (Morse & Field, 1995).

Experts have come up with detailed sampling procedures (Patton, 2015; Maxwell, 2013; Morse, 1994; Merriam, 2009; Marshall & Rossman, 2011; Creswell, 2013;). Creswell (2013), in his book, observes that the three pillars of a purposeful sampling strategy include (a) finalising of participants or sites (b) determination of sample size (c) choosing an effective sampling strategy.

Scholars have also written extensively about the challenges associated with determining sample size in qualitative research. Patton (2015) explains that effective purposeful sampling involves the careful selection of cases or respondents who are 'information rich'. Patton also observes that resource limitation is a deterrent in choosing cases or respondents which are 'information rich'.

Merrin (2009) observes that the issues of choosing a sample and sample size are a function of (a) type and number of research questions and (b) resources at the disposal of the researcher. In answer to a specific question on 'how many respondent', Merrin writes that "there is no answer" (p.80). She also recommends that researchers should include sample size numbers which are an approximate. These approximate numbers, in her opinion, can be changed at a later stage.

On the other hand, Sandelowski (1995) also discusses the various dimensions that a researcher must take into consideration while addressing the issue of sample size or its adequacy. Sandelowski observes that sample size determination must take into account "judgment and experience in evaluating the quality of the information against uses to which it will be put" (p.183).

On sample size, Creswell (2013) has made recommendations for five approaches. They include (a) case study: four to five cases (b) Grounded theory:

twenty to thirty cases (c) Ethnography: one homogeneous group where the culture is shared (d) Phenomenology: Between three to ten and (e) Narrative inquiry: about one to two cases. Apart from Creswell, Morse (1994) also recommends sample sizes for diverse approaches. His recommendations include: (a) Grounded theory: between thirty and fifty cases (b) understanding the core of an experience: six participants. While the papers by Creswell & Morse, provide researchers with definite numbers, Emmel (2013), has cautioned researchers against over-reliance these suggested sizes and urged researchers to consider additional factors. In a subsequent paper, Morse (2000) has elaborated extensively on the sample size recommendations and also observes that researchers need to take into account additional factors such as (a) topic (b) scope of inquiry (c) research design to arrive at an appropriate sample size.

III. Approaches to determine sample size in qualitative research

The authors, of this paper, have identified three approaches to determine sample size. These three approaches have been represented below and have been discussed, in details.

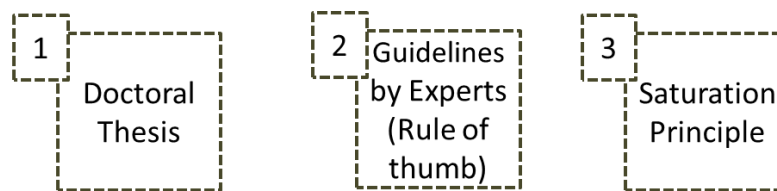


Figure 1: Approaches to sample size determination in qualitative research.

Approach 1: Based on doctoral thesis.

The issue of sample size has been addressed by doing a detailed dataset analysis of all theses, accepted by universities in Great Britain and Ireland, since the year 1716.

The content analysis was done on a specific website namely: "Index to Theses: A comprehensive listing of theses with abstracts accepted for higher degrees by universities in Great Britain and Ireland since 1716". The search was done with a purpose of identifying doctoral studies which had used interviews (unstructured, structured or semi-structured), for data collection. This website search was conducted from August 3rd to August 24th, 2009.

The details of the criteria used to exclude Ph.D. thesis is given below

1. Those abstracts, which did not specify the exact number of interviews (e.g. where it was stated by the authors that 'over fifty interviews were undertaken').
2. Those abstracts which specifically stated that the authors were also members of the field-work team.

3. Those abstracts which mentioned that more than one interview had been conducted for one participants (e.g. repeat interviews, longitudinal or panel studies).
4. Abstracts of thesis which had professional qualifications (e.g. doctoral thesis in clinical psychology), and where single client case studies were used.

The purpose of exercising the exclusion criteria was to ensure that only those theses were included in which the number of people interviewed, was specifically mentioned. The other key pointed to be noted is that this analysis only takes into account researches which have used personal interviews. Focus groups or, any other form of data collection deployed, has not been considered, in this analysis.

The key findings of this analysis has been shared below.

Descriptive statistics for each methodological group								
	No. of Studies Found	No. of studies post inclusion criteria	Range		Measures of Central dispersion			
			High	Low	Mode	Mean	Median	Std. Dev.
Action research	140	28	67	3	6	23	17	18.4
Case study	1401	179	95	1	40	36	33	21.1
Collaborative research	8	2	25	5		15	15	14.1
Content analysis	213	42	70	2	30	28	25	14.7
Critical/Emancipatory research	6	3	42	21		35	41	11.8
Discourse analysis	157	44	65	5	20	25	22	15.3
Ecological Psychology	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Educational ethnography	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Education connoisseurship	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ethnographic contents analysis	2	2	52	22		37	37	21.2
Ethnography of communication	1	1	34	34		34	34	
Ethnomethodology	7	2	55	11		31	31	27.6
Ethnoscience	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Event structure	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Grounded theory	429	174	87	4	25	32	30	16.6
Holistic ethnography	1	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Hermeneutics	19	9	42	7	N.A.	24	26	10.2
Heuristic research	0	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Life history	61	35	62	1	21	23	20	16.1
Naturalistic enquiry	2	1	26	26		26	26	
Phenomenology	57	25	89	7	20	25	20	19.9
Qualitative evaluation	7	1	42	42	N.A.	42	42	N.A.
Reflective phenomenology	0	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Structural ethnography	0	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Symbolic interactionism	22	12	4	87		33	28	26.5
Transcendental realism	0	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total	2533	560	95	1	30	31	28	N.A.

Table 2: *Descriptive statistics for each methodological group.* Source: Mason, M. (2010, August). Sample size and saturation in PhD studies using qualitative interviews. In *Forum qualitative Sozialforschung/Forum: qualitative social research* (Vol. 11, No. 3).

Mason's (2010) analysis indicated that the most common sample sizes, in the case of qualitative research, were twenty and thirty, followed by forty, ten and twenty-five.

Approach 2: Guidelines by Experts (Rule of thumb)

The issue of sample size can be addressed by referring to guidelines, defined by past researchers, based on methodological considerations and past experience. These guidelines, at times, however, cannot be supported. Guidelines tend to be similar in some cases, but also tend to diverge widely, in the same methodological domain (Sim, Saunders, Waterfield and Kingstone, 2018).

Considering these factors without losing focus of 'richness in data', Morse (2000) believes that the sample size, in the case of semi-structured interviews, should be between thirty and sixty. Mason notes that six to eight interviews is adequate when the sample is homogeneous. For in-depth interviews, the sample size ranges between eight to ten interviews. Mason's also notes the ideal sample size, in case of qualitative research, should be between twelve and twenty-six. Mason also discusses domain-specific sample size guidelines, indicated by past investigators in the context of qualitative research. It is believed that between thirty and fifty interviews should be adequate for researches in ethnography and ethno science, twenty to thirty for grounded theory methodology, six data sources for research in phenomenology. Mason also notes that fifteen would be the smallest acceptable sample size for all qualitative research.

Marshall, Cardon, Poddar & Fontenot (2013) believe that any size between twenty to thirty sources would suffice for grounded theory research. For phenomenological studies sample size between six and ten would be adequate and finally for case studies, any sample size between four to six data sources would be ideal.

On sample extensiveness Sobal (2001) undertook a detailed content analysis of qualitative studies published in a nutrition education journal. The study indicates that (a) for researches using interviews of individuals, forty-five respondents were the mean number (b) for interviews done in groups the mean number was fifteen groups and a total of one hundred and forty-one respondents.

A summary of expert opinions published by Guest, Bunce and Johnson (2006) and Sim, Saunders, Waterfield and Kingstone (2018), across methodological disciplines, is given below.

Summary of Expert Opinions across methodological disciplines			
Methodological discipline	Research paper by	Research Expert	Number of respondents
Qualitative research	Guest, Bunce and Johnson (2006)	Bertaux (1981)	Minimum of 15.
	Guest, Bunce and Johnson (2006)	Romney, Batchelder and Weller (1986)	4 respondents, using the Consensus theory.
	Sim, Saunders, Waterfield and Kingstone (2019)	Adler and Adler (2012)	A wide range between twelve and sixty is suggested with the mean being thirty.
	Sim, Saunders, Waterfield and Kingstone (2019)	Boddy (2005)	In case of similar or homogeneity of sample size, a limit of twelve FGDs or thirty depth interviews.
	Sim, Saunders, Waterfield and Kingstone (2019)	Kuzel (1999)	In case of sample homogeneity between five to eight respondents.
	Sim, Saunders, Waterfield and Kingstone (2019)	Lincoln and Guba (1985)	In case of in-depth personal interviews the sample size recommended is between twelve and twenty respondents.
	Sim, Saunders, Waterfield and Kingstone (2019)	Ritchie, Lewis, Elam, Tennant, and Rahim (2014)	Given that the quality of data collected as well as analysis of data would be diluted in case of a large sample size, a limit of fifty interviews is advised.
	Sim, Saunders, Waterfield and Kingstone (2019)	Warren (2002)	To publish a non-ethnographic research study published the recommended range of interviews is between twenty and thirty.
Ethnographic research	Guest, Bunce and Johnson (2006)	Bernard (2000)	Thirty six interviews.
	Guest, Bunce and Johnson (2006)	Morse (1994)	Thirty five interviews.
	Sim, Saunders, Waterfield and Kingstone (2019)	Bernard (2000, 2013)	For ethnographic studies a range of thirty and sixty. However, in another paper (Bernard, 2013, p. 175), the experts recommends that ten to twenty, information rich and sources would be adequate.
Phenomenological research	Guest, Bunce and Johnson (2006)	Morse (1994)	6 interviews.
	Guest, Bunce and Johnson (2006)	Creswell (1998)	5 to 25 interviews.
	Sim, Saunders, Waterfield and Kingstone (2019)	Dukes (1984)	3–10 participants.
	Sim, Saunders, Waterfield and Kingstone (2019)	Ray (1994)	The usual sample size for studies of this nature is between eight and twelve. The expert also observes that for phenomenological studies, a sample size of one may also be adequate.
	Sim, Saunders, Waterfield and Kingstone (2019)	Smith <i>et al.</i> (2009)	While appropriateness of sample size is also a function of the level of study (post or under graduate), in the case of interpretative phenomenological analysis a sample size between three and ten would suffice.
Grounded theory research	Guest, Bunce and Johnson (2006)	Morse (1994)	Thirty five interviews.
	Guest, Bunce and Johnson (2006)	Creswell (1998)	Twenty to thirty interviews.
	Sim, Saunders, Waterfield and Kingstone (2019)	Marshall, Cardon, Poddar, and Fontenot (2013)	Twenty to thirty interviews.
	Sim, Saunders, Waterfield and Kingstone (2019)	Corbin and Strauss (2015)	Recommend that to ensure theoretical saturation, the researcher needs to conduct at least five interviews of sixty minutes each.
Ethnoscience research	Guest, Bunce and Johnson (2006)	Morse (1994)	Thirty five interviews.
Qualitative ethology	Guest, Bunce and Johnson (2006)	Morse (1994)	Hundred to two hundred interviews.
Case study research	Sim, Saunders, Waterfield and Kingstone (2019)	Creswell (2013)	Four to five cases.
Narrative research	Sim, Saunders, Waterfield and Kingstone (2019)	Creswell (2013)	Two or three cases.

Table 1: *Experts opinions across methodological disciplines*. Source: Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59-82 and Sim, J., Saunders, B., Waterfield, J., & Kingstone, T. (2018). Can sample size in qualitative research be determined a priori? *International Journal of Social Research Methodology*, 21(5), 619-634.

While the above table above provides broad guidelines, it still does not answer questions on sample size adequacy as opinions of experts not just differ, but tend to fluctuate dramatically across methodological disciplines.

Approach 3: Sample size based on the principle of saturation

The notion of data saturation “entails bringing new participants continually into the study, until the data set is complete as indicated by data replication or redundancy. In other words, saturation is reached when the researcher gathers data to the point of diminishing returns, when nothing new is being added. Saturation entails adding respondents into the research until the data collected is complete. Therefore, saturation can be explained as a point where no new information or data needs to be collected. Hence there is a direct co-relation between sample size and the principle of saturation (Marshall, Cardon, Poddar and Fontenot, 2013). Bowen (2008) describes theoretical saturation as the state where (i) there are no more issues which come to the foreground with regards to data category (ii) the researcher does not acquire any new insights and finally (iii) no new themes emerge or can be identified.

On the issue of saturation, Mason (2010) notes that “saturation is a point when diminishing returns sets in. In other words, it can be explained as a point where more data does not yield more information”. Extending the discussion further Bowen (2008) notes that the purpose of saturation lies in data replication, which in turn ensures verification, comprehension and completeness. Given this Guest, Bunce & Johnson (2006) state that the principle of saturation has become a benchmark to define purposive sample sizes, especially in health science research.

While the concept of saturation has theoretically been accepted as a gold standard, questions were raised in the past about due to the absence of concrete guidelines. Marshall, Cardon, Poddar and Fontenot (2013) observe “Saturation is key to excellent qualitative work but there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation”.

Different studies have leveraged the saturation concept to determine size of sample in qualitative research. Examples of such studies include:

1. Post-coding of data and based on statistical confirmation of redundancy in codes, it can be observed that twenty to thirty interviews would be adequate to achieve saturation in data (Marshall, Cardon, Poddar & Fontenot 2013: 11–22).
2. The journal ‘Archives of Sexual Behaviour’ in its policy has stated that twenty-five to thirty interviews are necessary to achieve saturation and redundancy (Dworkin 2012: 1319–1320).
3. Marshall (1996) observed that after fifteen interviews no new themes emerged from data. He also noticed that after completing twenty-four interviews, a framework could be built. In the opinion of Marshall (1996),

twenty-four interviews was the point where thematic and theoretical saturation was achieved.

4. In the context of saturation, twenty-five to thirty interviews are more than adequate to discover 90–95% of information needs (Griffin & Hauser 1993: 1–27).
5. It is also statistically proven that out of the one hundred and nine codes generated from thirty interviews, one hundred codes (92%) were generated from the first twelve interviews. The remaining nine codes (8%) emerged from the next eighteen interviews. Saturation in this case had set in after the first twelve interviews (Guest, Bunce & Johnson 2006: 59–82).

A white paper titled “Qualitative Interviews: When enough is ENOUGH”, published by Research by Design, a market research agency, has also defined criteria for saturation across methodological disciplines.

Recommended sample size to achieve data saturation in qualitative interviews		
Sample Size	Expert(s)	Key Qualifiers
One +	Back (2012)	Scope of research/ Research type
One +	Becker (2012)	Scope of research
One +	Denzin (2012)	Scope of research/ Research type
One to hundred	Passerini (2012)	Scope of the research or phenomenon to be investigated
One to Two hundred and sixty	Brannen (2012)	Characteristics of the target audience
		Proficiency of the candidates
		Scope of research (complex longitudinal vs case study)
Four to five	Romney, Weller and Batchelder (1986)	Candidates having a high degree of proficiency and command on the research topic
Six to twelve	Guest, Bunce & Johnson (2006)	Scope of research is narrow
		Similar target audience
Six to seventy	Miller (2012)	Dependent on resources allocated to a project
		Scope of research/ Research type
Twelve to sixty	Adler & Adler (2012)	Number of noticeable subgroups in target audience Dependent on resources allocated to a project
Fifteen	Baker & Edwards (2012)	Candidates who are ‘Information rich’ in relation to the research topic
Twenty to Thirty	Griffin & Hauser (1993)	Similar target audience/segment
		This is based on the assumption that ninety percent of the needs will be identified
Twenty to Thirty	Curry, Nembhard and Bradley (2009)	Scope of research
		Candidates who are ‘Information rich’ in relation to the research topic
Twenty to Forty	Warren (2002)	Scope of research project
		Characteristics of target audiences
Thirty	M. Mason (2010)	Mean sample determined on the basis of meta-analysis done on five hundred and sixty doctoral thesis.

Table 3: Recommended sample size to achieve data saturation in qualitative interviews. Source: A white paper titled “Qualitative Interviews: When enough is ENOUGH”, published by Research by design.

IV. Discussion

The discussions around sample size, in the context of qualitative research, largely tend to be focused on two major points (a) the issue of extensiveness or the size of the sample (b) the issue of appropriateness or relevancy of sample size. Broadly, these two issues need to be addressed through appropriate procedures, at the planning stage or prior to the study and also once the research or when the analysis and interpretation of data is complete. In the initial or the planning state the researcher needs to focus on developing a specific sampling strategy. The purpose is to determine the number of respondents and provide justification for the number of respondents. It is also imperative that the researcher's mind remains "reflexive or alive" and continuously assess and evaluate all issues such as sampling and saturation. Post the analysis and interpretation stage, researchers also need to address issues on adequacy of sample size. In the context of sampling, Onwuegbuzie and Leech (2007, p.117) believe that it is essential for researchers to carry out a qualitative power analysis of "the ability or capacity to perform or act effectively".

Qualitative power analysis is a method which harmonises all researches conducted on the phenomenon. The purpose of qualitative power analysis is to provide a basis for sampling decisions. While it is obvious that sampling, in the context of qualitative research, is deliberate, it is the duty of the researcher to provide justification for all procedural decisions. This can be accomplished, by the researcher, by conducting an extensive deliberation on the strategy adopted for sampling, as well as by providing a detailed assessment on the issue of extensiveness of size of the sample. To illustrate this further, research should include extensive deliberation on why a particular set of people were ideal for research, apart from providing justification on the size of the sample.

In case the researcher is unable to justify or defend the extensiveness of size of the sample then it is the bounden duty of the researcher to contemplate about the same in the limitations section of the study. It has been observed that while most researches have a limitation section, the discussions in this section remain restricted to discussions on challenges on generalisability of research.

Maxwell (2013) observes that the purpose of any qualitative research is in-depth explanation, description and interpretation of a phenomenon. Given this, any deliberation, in the limitation section, needs to focus on the level of depth achieved by the research outcomes.

V. Conclusion

The authors of this paper have identified three approaches that can be used to determine size of sample, in qualitative research. It is the choice if the person conducting the research to choose one or a combination of these approaches, to ensure extensiveness and appropriateness of data.

Green and Thorogood (2009 [2004]) agree with Guest et al. (2006), and observe that which the principle of saturation is a cogent and persuasive idea, it cannot be applied across-the-board. One of the areas where it becomes difficult to apply

the principle of saturation is in the domain of ‘funded work’ or research which has time constraints. Green and Thorogood (2009 [2004]) believe that, in the context of ‘funded research’ researchers do not have the flexibility of continuously doing the open-ended research that is necessary. Another issue associated with the saturation idea, more so in the context of grounded theory, is the point that, all the features and dimensions that need to be saturated, are “potentially limitless” (p.120).

Green and Thorogood (2009 [2004]) also note that more often, than not, organisations and institutions funding the research expect a comprehensive proposal where the following particulars such as (a) who will be interviewed (b) how many people will be interviewed is described, at the planning stage, well before data collection. The issues of who and how many are requested for not only by research sponsors but also by the ethics committees. In conclusion, the right size of the sample determined appropriately, by researchers, enables them to save valuable resources such as money and effort, apart from time.

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