

QUALITATIVE AND QUANTITATIVE RESEARCH TECHNIQUES FOR HUMANITARIAN NEEDS ASSESSMENT DURING EMERGENCIES: AN INTRODUCTORY BRIEF

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Abstract

Scientific measurement is the key to quantitative research. Because quantitative data is numeric, the collection and analysis of data from representative samples are more commonly used. In its simplest terms, the more representative the sample is, the more likely that a quantitative analysis will accurately and precisely reflect a picture of the impact of the disaster when generalized to the whole affected population. However, even a representative sample is meaningless unless the data collection instruments used to collect quantitative data are appropriate, well designed, and clearly explained to end-users of the data.

Qualitative methods of research and analysis provide added value in identifying and exploring intangible factors such as cultural expectations, gender roles, ethnic and religious implications, and individual feelings.

Keywords: *Qualitative Research, Quantitative Research, Key Informant Interviews.*

Introduction

Qualitative and Quantitative Research:

Within the perspective of phase- I and phase- II rapid needs assessments during the initial days of emergency response, both qualitative and quantitative information is required to advance a collective understanding of how people are affected by emergencies. Quantitative data guides in understanding the magnitude

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and scale of a humanitarian crisis by providing a numeric picture of its impact upon affected communities.

It addresses the questions: *how many* and *how much*. Qualitative data, on the other hand, focuses on determining the nature of the impact of a disaster upon affected populations. Qualitative data answers questions of how and why coping strategies have adapted, or failed to adapt, to the changed circumstance.

Collection, collation, analysis, and synthesis of qualitative and quantitative information gathered and analyzed using appropriate sources, tools, and methods is the foundation of rapid needs assessments that allow decision-makers to plan a timely, appropriate, and coordinated emergency response.

When undertaking a needs assessment, a combination of different types and sources of data is required to build a holistic picture of the affected population. Sources for information include both primary and secondary data. Types of information include qualitative and quantitative data.

1.1.Data Sources

Primary data is most generally understood as data gathered from the information source and which has not undergone analysis before being included in the needs assessment. Primary data is collected directly from the affected population by the assessment team through fieldwork. Primary data is most often collected through face-to-face interviews or discussions with members of the affected community, but can also be gathered through phone interviews, radio communication, email exchange, and direct observation.

Secondary data is information that has typically been collected by researchers not involved in the current assessment and has undergone at least one layer of analysis before inclusion in the need assessment. Secondary data can comprise published research, internet materials, media reports, and data that has been cleaned, analyzed, and collected for a purpose other than the needs

assessment, such as academic research or an agency or sector-specific monitoring report.

During the phase- I of an emergency assessment, the majority of data used to build a shared picture of the disaster-affected area and populations comes from secondary sources. This is largely because time constraints during the first few days following a sudden onset disaster prohibit a large-scale field data collection exercise.

As the emergency evolves and humanitarian stakeholders, and the assessment team, have greater direct access to the affected population, the proportion of primary data will increase and the consolidated analysis of both types of data is necessary. This is increasingly true as phase II segues into phase III.

Clearly understanding the information gleaned from secondary sources frees the primary data collection from a joint or coordinated needs assessment to focus on key information gaps (issues that are presently unknown) and on ensuring that the voice, needs, and priorities of an affected population are captured and shared.

All field and desk information gathering activities for needs assessments will:

- Collect evidence on the impact of the disaster across sectors
- Produce findings of the disaster which are not already known.
- Triangulate information collected to confirm, or dispute, findings.
- Investigate the effect of a change of circumstance (directly or indirectly due to the disaster) on population.
- Use a pre-defined set of research techniques to ensure consistency in data collection, analysis, and presentation of findings.

2.1.Types of Data

The different types of data required for a needs assessment are most easily understood using the descriptive terms: *qualitative* and *quantitative*. Both primary and secondary data can be either qualitative or quantitative. The difference is in the

type of information collected, the questions and information requirements that the data is meant to address, and the methods used to analyze it.

3.1. Quantitative Information

Quantitative research methods are characterized by the collection of information that can be analyzed numerically, the results of which are typically presented using statistics, tables, and graphs. For phase I of assessments, the majority of quantitative data collected is secondary data (e.g. affected population figures provided by the government). During phase II, field-level questionnaires complement the continued collection of secondary data through the collection of quantitative information using close-ended questions, typically in questionnaire format.

During phase- I and phase- II of an assessment, there will be limited primary quantitative data collected from a joint field assessment process (i.e. a multi-sector assessment with the buy-in and support of multiple agencies) because of time and access constraints. Quantitative information collected through primary data collection will be relevant only to the visited sites and cannot be generalized for all affected areas and groups. It will tell little about the big picture due to the limited sample size and sampling methodology. For example, if in 30 sites visited for primary data collection it is found that the number of newly arrived IDPs is twice the total number of pre-disaster inhabitants, this does not mean that in all affected communities IDPs now comprise twice the pre-disaster population. However, quantitative information *will* enhance a better understanding of the situation at the *site* level and help stakeholders recognize trends resulting from the disaster's impact.

Nevertheless, being able to quantify the magnitude and scope of the crisis is critical to the decisions made in these phases of a disaster. Quantitative information required to feed into this information gap will usually come from government or other official sources, based on pre-crisis census information and population projections for areas known to be affected by the disaster rather than

from extrapolation from a small number of surveyed sites. At the early stage of a disaster, demographic information including estimates of numbers of children under 5 years of age, pregnant women, older persons, persons with disabilities, and other vulnerable groups should also be based on pre-crisis secondary information.

3.1.1 Quantitative Research Methods

The quantitative research method aims to test pre-determined hypotheses and produce generalizable results. Using statistical methods, the results of quantitative analysis can confirm or refute hypotheses about the impact of a disaster and the ensuing needs of the affected population. They can also measure impact according to humanitarian indicators. Conclusions made from the analysis of quantitative data indicate *how many* are affected, *where* the greatest area of impact is, and *what* are the key sector needs.

Scientific measurement is the key to quantitative research. Because quantitative data is numeric, the collection and analysis of data from representative samples are more commonly used. In its simplest terms, the more representative the sample is, the more likely it is that a quantitative analysis will accurately and precisely reflect a picture of the impact of the disaster when generalized to the whole affected population. However, *even a representative sample is meaningless unless the data collection instruments used to collect quantitative data are appropriate, well designed, and clearly explained to end-users of the data.* All too often, designers of data collection tools frame qualitative questions quantitatively and vice versa. Data collected using poorly designed questionnaires may solicit an enormous amount of data, but result in much of it is unusable as a result of being too difficult to measure and impossible to generalize for the total affected areas.

Larger sample sizes tend to be used for collecting quantitative information, to gather as representative a picture as possible. However, in any assessment process, there is a trade-off between the representativeness and diversity of a sample and the efficiency and timeliness with which data can be collected. Assessments in phases I and II do not need to be as representative as they need to be rapid. The use of large representative sample sizes does not typically happen

until phase III of an assessment when there is sufficient time and access to enable sampling of households and individuals.

Previous experience in assessments highlights the fact that measurable amounts of quantitative information are often collected during assessments, but not used. This type of redundant information falls into two main question categories:

- Questions with integrity, but asked by members of an assessment team who lack the capacity and/or time to analyze the responses. For example, the question *of how much did you spend last week on your food?* is useful, but with up to a dozen potential answers, no baseline reference to compare to, and limited resources for data analysis is too detailed to be used critically.
- Questions that are valid, but technically difficult to obtain valid answers to, given the capacities of the enumerators. For example, *asking questions of MUAC* measurements is likely to lead to invalid and inaccurate entries, and an eventual discounting of the data, given the expertise, experience, and capacity of enumerators.

3.1.2. Strengths and Weaknesses of Quantitative Research

The advantage of legitimate quantitative data, that is data that is collected rigorously, using the appropriate methods, and analyzed critically, is in its reliability. However, the shortcoming of quantitative data is that it fails to provide an in-depth description of the experience of the disaster upon the affected population. Knowing how many people are affected and their locations do not provide sufficient information to guide agencies and sectors on what they should plan for in terms of response. Knowing why there is a problem and how people are affected will combine with the numbers and locations to provide insight on how best to tailor the humanitarian response.

For example, quantitative data collection may indicate categorically that 2,00,000 people were affected by an Earthquake in four districts. This information would answer the questions:

- *How many people have been affected by the Earthquake?*

- *In how many districts?*

However, this data does not tell you what priority needs are for affected persons in light of the Earthquake or how the Earthquake has impacted traditional coping strategies. Additional quantitative data could be collected to determine specific needs by asking community members to rank a list of priority needs.

But this would still fall short of explaining *why* these are the priority needs and how that impacts upon and is affected by local culture and values. It would also fail to provide information about priority needs for humanitarian intervention. To gather this information, an investigator would need to ask an open-ended question, such as how has the disaster affected traditional coping strategies used by members of the community? Or why are these priority needs for your community?

The main strengths of quantitative data collection are that it provides:

- Numeric estimates
- Opportunity for relatively uncomplicated data analysis
- Verifiable data
- Data that are comparable between different communities within different locations
- Data that do not require analytical judgment beyond consideration of how the information will be presented in the dissemination process.

Weaknesses inherent in quantitative data include:

- Gaps in information - issues that are not included in the questionnaire, or secondary data checklist, will not be included in the analysis
- A labour-intensive data collection process
- Limited participation by affected persons in the content of the questions or direction of the information collection process.

3.2 *Qualitative Information*

Qualitative research is by definition exploratory. It is used when we don't know what to expect, how to define the issues or lack an understanding of *why* and

how affected populations are impacted by an emergency. Qualitative data like quantitative data is based on empiric investigation and evidence. However, qualitative research explores information from the perspective of both groups and individuals and generates case studies and summaries rather than lists of numeric data.

Qualitative data are often textual observations that portray attitudes, perceptions, or intentions. Conclusions made from collected qualitative data take the form of informed assertions about the meaning and experience of certain (sub) groups of affected populations. The key contribution of qualitative data is that it provides information about the human aspect of the emergency by acknowledging context to the priority needs of affected populations and it respecting the core principle of needs-based assistance and ownership by affected populations.

One major challenge for phase I- and phase- II assessments is finding the right balance in collecting and analyzing qualitative information to identify trends and overarching issues for people affected by a crisis and to present this information appropriately.

3.2.1. Qualitative Research Methods

Qualitative methods of research and analysis provide added value in identifying and exploring intangible factors such as cultural expectations, gender roles, ethnic and religious implications, and individual feelings. Qualitative research explores relationships and perceptions held by affected persons and communities. As a result, smaller sample sizes chosen purposefully can be used for the following reasons:

- The larger the sample size for qualitative data collection is, the more complex, time-consuming, and multi-layered the analysis will be.
- For a truly random sample to be selected, the characteristics under study of the whole population should be known, which is rarely possible at the early stage of an emergency.

- A random sampling of a population is likely to produce a representative sample only if the research characteristics are evenly distributed within the population. There is no evidence that the values, beliefs, attitudes, and perceptions that form the core of qualitative research are normally distributed, making the probability approach inappropriate.
- Some informants are more likely to provide greater insight and understanding of a disaster's impact to the assessment team, due to a variety of factors including their social, economic, educational, and cultural position in the community. Choosing someone at random to answer a qualitative question would be analogous to randomly asking a passerby how to repair a broken car, rather than asking a garage mechanic.

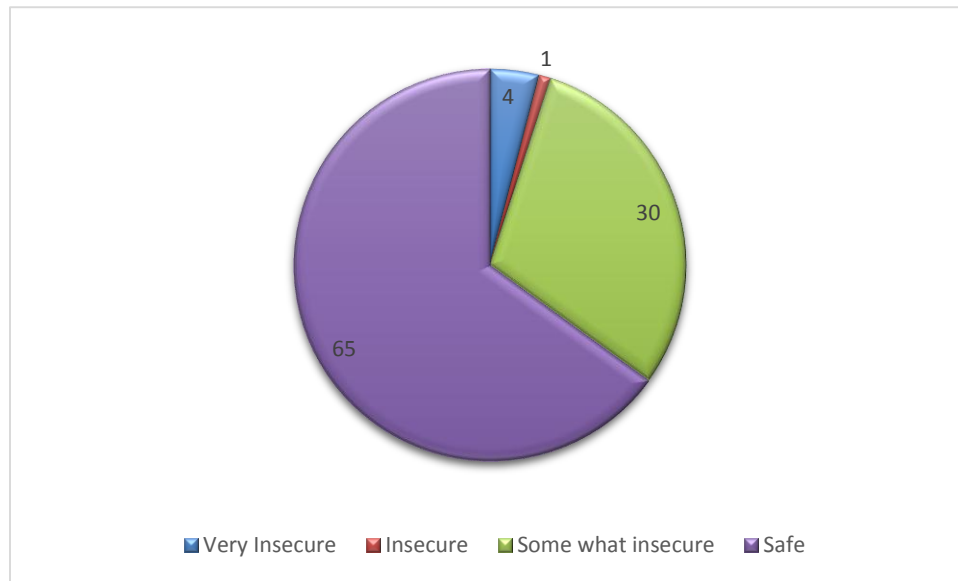
The qualitative sample must be big enough to assure inclusion of most or all of the perceptions that might be important. The smaller the sample size is, the narrower the range of perceptions that may be heard. The larger the sample size, the less likely it is that the assessment team would fail to discover a perception that they would have wanted to know. In other words, the objective in designing qualitative research is to reduce the chances of discovery failure as opposed to reducing (quantitative) estimation error. In practice, the number of sample sites or groups becomes obvious as the assessment progresses, as new categories, themes and explanations stop emerging from the data (theoretical saturation). This requires a flexible assessment design and an iterative, cyclical approach to sampling, data collection, analysis, and interpretation.

Data originally obtained as qualitative information about individual items may give rise to quantitative data if they are recorded or categorized numerically. Conversely, originally quantitative data are sometimes grouped into categories to become qualitative data. (for example, income below Rs 300/day, income between Rs 300day/ and Rs 500/day, and income above Rs 500/day).

Data gathered through qualitative methods is often presented in the form of a case study. However, as with all data, results can also be presented in graphs, tables, and using other (traditionally) quantitative methods. It is important, though,

to realize that just because qualitative information is presented in a graph, it does not suddenly become quantitative.

Table-1 illustrates a graph of qualitative information which has been presented quantitatively. The issues presented are clear examples of qualitative information and indicate *how* affected people *feel* about the impact of a conflict on their security. The responses from the focus group discussion (FGD) can be quantified according to the numbers of FGD participants, and indicate trends, but they cannot be extrapolated to apply to all persons affected by the crisis.



**Chart 1: Perceptions of Security for Disaster-affected Person
Perceptions of Security (data from 10 FGDs)**

3.2.2. Strengths and Weaknesses of Qualitative Research

The main strengths of qualitative data collection are that it provides:

- Rich and detailed information about affected populations
- Perspectives of specific social and cultural contexts (i.e. the human voice)

- of the disaster)
- Inclusion of a diverse and representative cross-section of affected persons
 - In-depth analysis of the impact of an emergency
 - A data collection process that requires limited numbers of respondents
 - A data collection process that can be carried out with limited resources.

Weaknesses inherent in qualitative data are that it:

- Results in data that is not objectively verifiable
- Requires a labour intensive analysis process (categorization, recoding, etc.)
- Needs skilled interviewers to successfully carry out the primary data collection activities.

4. Data Collection Techniques

Both quantitative and qualitative data are empiric, but collect different kinds of information using different methods. Neither type of data is intrinsically superior to the other. Rather, the key in developing an accurate and holistic picture of the impact of a disaster on an affected population is ensuring that type of data collected matches with the method of collection to ensure the best possible data. Asking the right questions in the right ways at the right time and of the right audiences is vital to achieving reliable, valid, and usable assessment information.

During the immediate days following a sudden-onset emergency, assessment teams will be dependent primarily on secondary data. As the access to affected populations and areas increases, assessment teams will be able to increase their use of primary data. There are four main ways to collect primary information in the field during phases-I and phase-II of an assessment. These include:

- (a) Direct observation.
- (b) Key informant interviews (KIs) provide key information on individual perspectives and experiences.
- (c) Focus group discussions can be effective in identifying the cultural norms and understanding the issues of concern within groups or subgroups in an

affected population but demand a highly skilled facilitator.

- (d) Community group discussions are more general group discussions with disaster-affected persons located at a specific site impacted by the crisis. A community group has less homogeneity than an FGD.

Direct observation, also known as participant observation, is a process by which an assessment team collects data on naturally occurring behaviour within their usual context. This is achieved by observing conditions and specific features of an affected site from a range of viewpoints and locations to provide an overall view of the affected area and by noting these observations in a checklist. Observation can put into context information provided by affected persons through key informant interviews of community/focus group discussions. For example, latrines may still exist within the community, but the effects of the earthquake may have made them accessible only for able-bodied persons. Direct observations by assessment teams also help them compare conditions between sites, something that analysis of information from the affected population at one single site is not able to do.

Key informant interviews, or semi-structured interviews, provide vital information on individual perspectives and experiences through direct discussion. KI interviews involve a set of key questions which explore the impact of the disaster on the community as a whole. A KI is *a primary data source with prior knowledge of the affected community* who can provide information on behalf of the community on the impact of the disaster and the priority community needs. Data from KIs can be combined and analyzed to develop an understanding of *how* an emergency has affected different (sub) groups of a population, *why* it has so affected them, and what their ensuing priority needs and concerns are and are likely to be overtime.

As with KI interviews, FGDs are effective in identifying the cultural norms and understanding the issues of concern within groups or sub-groups in an affected population which affect community response to a disaster and use of coping mechanisms by those community members. An FGD is a group discussion with persons of similar ages and backgrounds (and usually gender) whose experience of

the disaster will likely be similar. Information gathered from an FGD *enables analysis and understanding of a selected topic based on common characteristics of the groups*. For example, an FGD of rice farmers could be used to understand the impact of a flood on their crop; an FGD of mothers of young children could be used to understand post-disaster child feeding concerns.

Sometimes in the initial days after a crisis, it may not be possible to form discrete FGDs that meet specific FGD criteria. In addition, it may not be possible to include someone with FGD facilitation skills in the assessment team. When constraints including time, human resources, and access to people affected by a disaster make it difficult to organize FGDs, a community group can be a useful way to capture some of the views and priorities of the affected population and to see which issues there is consensus on.

A community group is comprised of members of the affected community, but is often larger in number and crosses gender, age, ethnicity, and other standard FGD diversity parameters in composition. The nature and composition of the group and how it was formed should always be included in the reporting notes.

Table 1: Qualitative and Quantitative Research Methods

	Qualitative Research Method	Quantitative Research Method
When to use it	<ul style="list-style-type: none"> • When an in-depth understanding of a specific issue is required • To understand behaviour, perception, and priorities of the affected community • To explain the information provided through quantitative data • To emphasize a holistic approach (processes and outcomes) • When the assessor only know roughly in advance 	<ul style="list-style-type: none"> • To get a broad comprehensive understanding of the situation • To get socio-demographic characteristics of the population • To compare relations and correlations between different issues • When accurate and precise data is required • To produce evidence about the type and size of problems

	what he/she is looking for	<ul style="list-style-type: none"> When the assessor knows clearly in advance what he/she is looking for
	Recommended during earlier phases of assessments	Recommended during latter phases of assessment
Objectives and main features	<ul style="list-style-type: none"> To explore, understand phenomena Provides an in-depth understanding of specific issues Detailed and complete information, contextualization, interpretation, and description Perspectives, opinions, and explanations of affected populations toward events, beliefs, or practices 	<ul style="list-style-type: none"> To seek precise measurement, quantify, confirm hypotheses Provides a general overview Provides demographic characteristics Objective and reliable Apt for generalization Objectively verifiable Prediction, causal explanation
Data format	<ul style="list-style-type: none"> Data can be observed but not measured Mainly textual (words, pictures, audio, video), but also categorical 	<ul style="list-style-type: none"> Data that can be counted or measured. Involves amount, measurement, or anything of quantity Mainly numerical and categorical values
Answers the questions	<p>Answers questions arising during the discussion</p> <ul style="list-style-type: none"> How? Why? What do I need to look for in more detail? 	<p>Answers a controlled sequence of questions with predetermined possible answers</p> <ul style="list-style-type: none"> What? How many?
	Questions are generally open-ended	Questions are closed
	<ul style="list-style-type: none"> Looks at the whole context from within Searches for patterns 	<ul style="list-style-type: none"> Looks at specific aspects from the outside

Perspective	<ul style="list-style-type: none"> Lends itself to community participation. Seeks depth of perspective through ongoing analysis (e.g. Waves of data) 	
Methods	<ul style="list-style-type: none"> Individual interviews Key informant interviews Semi-structured interviews Focus group discussions Observation 	<ul style="list-style-type: none"> Quick counting estimates Sampling surveys Population movement tracking Registration Structured interviews
Sampling	<ul style="list-style-type: none"> Non-random (purposive) 	<ul style="list-style-type: none"> Random
Study design and instruments	<ul style="list-style-type: none"> Flexible, the assessor is the primary instrument for data collection and analysis. 	<ul style="list-style-type: none"> Fixed, standards control the assessor's bias.
Questionnaire Tool types	<ul style="list-style-type: none"> Checklist with open questions and flexible sequence 	<ul style="list-style-type: none"> A predetermined questionnaire with sequence and structure
	<ul style="list-style-type: none"> Use inductive reasoning Involves a systematic and iterative process of searching, categorizing, and integrating data 	<ul style="list-style-type: none"> Uses deductive methods Descriptive statistics Inferential statistics
Analysis	<ul style="list-style-type: none"> Describes the meaning of research findings from the perspective of the research participants Involves developing generalizations from a limited number of specific observations or experiences Analysis is descriptive 	

Quantitative data is often described as objective while qualitative data is characterized as subjective. This distinction is both misleading and unhelpful since the subjectivity or objectivity of data depends not upon its intrinsic identity but upon the bias of the investigator, the methods used to collect it, and the ensuing analytical process. This can be true for both qualitative and quantitative data.

The key to gathering a shared picture of the impact of a disaster-affected population is through combining both types of data; when used along with quantitative methods, qualitative research can help us to interpret and better understand the complex reality of a given situation and the implications of quantitative data.

Conclusion

Quantitative and qualitative information falls upon a continuum and varies according to the type of data, collection tool, and method of data analysis. The main distinction between the two is that qualitative methods do not seek statistical significance and thus, cannot be extrapolated without relying on judgment.

Any extrapolation of qualitative data to larger areas will inevitably be general and not statistically rigorous. Qualitative research methods make up for the lack of statistical rig by providing explanations and understanding.

Four elements regarding qualitative and quantitative information are key to ensuring the use of the right types and right sources of information during the initial days of a rapid needs assessment to improve decision making:

1. Qualitative and quantitative information are both important to understand the impact of a disaster upon an affected population. However, given time and access constraints, primary qualitative information will most often combine with secondary quantitative information to address the knowledge gaps.
2. Collection of both qualitative and quantitative data calls for specific and agreed-upon technical methods and requires specific skills sets for accurate collation, collection, and analysis.
3. In qualitative research, the data collection instrument is the researcher. Thus, the assessment team is the core element in both the observation of the problem and in the analysis.
4. Qualitative and quantitative data interpretations are interchangeable; the crucial consideration is in how data is presented and what questions it is being used to answer.

With all data collection methods, be they quantitative or qualitative, there is a responsibility by the assessment teams to be accountable to the persons from whom they solicit information. Awareness of, and adherence to, key humanitarian principles should be the first step of all needs assessment teams when carrying out field research. Affected persons should be invited to participate in the data collection process rather than feel cajoled or pressured. Information on how, when, where, and with whom the data will be used must also be shared with community research participants. Expectations regarding potential advantages or disadvantages, of participating in the research process must be managed carefully to ensure that community members do not develop false expectations about humanitarian support or intervention. Failure to communicate clearly with affected populations participating in research cannot only compromise research results but, in some cases, can compromise the safety and security of the affected populations themselves.

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