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Summary of quantitative data collection methods with relevant example and qualitative data collection methods with relevant examples.

Data collection is an important aspect of any type of research study. Data collection is the process of getting the information that is useful to the study and which will enable the researcher to answer the researcher to answer the research questions and test the hypotheses.

There are two ways of collecting data and these include the primary method and the secondary method.

The primary method: the researcher collects the data at first hand e.g. experiments, surveys e.t.c.

The secondary method: the researcher gets information from an existing record e.g. published reports, archives.

There are also other ways which are the:

* Quantitative data collection methods
* Qualitative data collection methods

**QUANTITATIVE DATA COLLECTION METHODS:**

Quantitative data collection methods rely on random sampling and structured data collection instruments that fit diverse experiences into predetermined response categories. They produce results that are easy to summarize, compare, and generalize.

Quantitative research is concerned with testing hypotheses derived from theory and/or being able to estimate the size of a phenomenon of interest. Depending on the research question, participants may be randomly assigned to different treatments.

Typical quantitative data gathering strategies include:

* Administering surveys with closed‐ended questions (e.g., face‐to face and telephone interviews, mail questionnaires, etc.)
* Experiments/clinical trials.
* Observing and recording well‐defined events (e.g., counting the number of patients waiting in emergency at specified times of the day).
* Obtaining relevant data from management information systems.
* Ethnographic methods
* Chart review
* Focus group discussion

INTERVIEWS

Interview is the method that permits face to face contact of the researcher with the subject in order to collect data.

In Quantitative research (survey research), interviews are more structured than in Qualitative. Structure interview is where the researcher reads the questions to the subjects from a prepared interview guide and records the answers as they respond, on the guide as permitted by the subject. The process must be pleasant and interesting to both the interviewer and respondent. In a structured interview, the researcher asks a standard set of questions and nothing more Telephone interviews

Advantages:

* Less time consuming
* Less expensive
* Researcher has ready access to anyone who has a landline telephone.
* Higher response rate than the mail questionnaire.
* Can be fully automated using CATI (Computer Assisted Telephone Interviewing) saving data processing time.

Disadvantages:

* The response rate is not as high as the face‐to‐face interview.
* The sample may be biased as only those people who have landline phones are contacted (excludes people who do not have a phone, or only have cell phones).

Face‐to‐face interviews

Advantages:

* Enables the researcher to establish rapport with potential participants and therefore gain their cooperation.
* Yields the highest response rates in survey research.
* Allows the researcher to clarify ambiguous answers and when appropriate, seek follow‐up information.

Disadvantages:

* Impractical when large samples are involved
* Can be time consuming and expensive.

QUESTIONNAIRES

A questionnaire is a set of questions aimed at eliciting data and is self administered. The questionnaire should be straightforward, in a simple language and brief. The questions should be relevant and clear. Questionnaires may be open or closed type. These devices help simplify and quantify people's behaviors and attitudes.

Mail questionnaires

Advantages:

* Can be sent to a large number of people.
* Saves the researcher time and money compared to interviewing.
* People are more truthful while responding to the questionnaires regarding controversial issues in particular due to the fact that their responses are anonymous.
* Allow the respondent to answer at their leisure.

Disadvantages:

* In most cases, the majority of people who receive questionnaires don't return them.

Therefore:

Over‐sampling may be necessary if doing a one‐time mail out in order to get enough completed questionnaires to be generalizable to the population.

* Follow‐up reminders to participants encouraging them to complete the questionnaire may be necessary, thereby increasing the time and cost to conduct the study.
* May need to offer incentives to increase response rate.
* Time – mail surveys take longer than other types of surveys.

Web‐based questionnaires:

A new and inevitably growing methodology is the use of Internet based research. This would mean receiving an e‐mail on which you would click on an address that would take you to a secure web‐site to fill in a questionnaire.

Advantages:

* This type of research is often quicker and less detailed.
* Very cost effective.

Disadvantages:

* Excludes people who do not have a computer or are unable to access a computer.
* Need to have access to email addresses.
* Many worksites have screening mechanisms in place blocking access to employee emails.
* The validity of such surveys may be in question as people might be in a hurry to complete it and so might not give accurate result

**QUALITATIVE DATA COLLECTION METHODS:**

Qualitative data collection methods play an important role in impact evaluation by providing information useful to understand the processes behind observed results and assess changes in people’s perceptions of their well‐being. Furthermore, qualitative methods can be used to improve the quality of survey‐based quantitative evaluations by helping generate evaluation hypothesis; strengthening the design of survey questionnaires and expanding or clarifying quantitative evaluation findings. These methods are characterized by the following attributes:

* They tend to be open‐ended and have less structured protocols (i.e., researchers may change the data collection strategy by adding, refining, or dropping techniques or informants).
* They rely more heavily on interactive interviews; respondents may be interviewed several times to follow up on a particular issue, clarify concepts or check the reliability of data.
* They use triangulation to increase the credibility of their findings (i.e., researchers rely on multiple data collection methods to check the authenticity of their results).
* Generally their findings are not generalizable to any specific population; rather each case study produces a single piece of evidence that can be used to seek general patterns among different studies of the same issue.

Regardless of the kinds of data involved, data collection in a qualitative study takes a great deal of time. The researcher needs to record any potentially useful data thoroughly, accurately, and systematically, using field notes, sketches, audiotapes, photographs and other suitable means.

The data collection methods must observe the ethical principles of research.

The qualitative methods most commonly used in evaluation can be classified in three broad categories:

* In‐depth interview
* Observation methods
* Document review

**IN‐DEPTH INTERVIEWS**:

In‐depth interviews are a useful qualitative data collection technique that can be used for a variety of purposes, including needs assessment, program refinement, issue identification, and strategic planning. In‐depth interviews are most appropriate for situations in which you want to ask open‐ended questions that elicit depth of information from relatively few people (as opposed to surveys, which tend to be more quantitative and are conducted with larger numbers of people).

**OBSERVATION METHODS:**

One of the most common methods for qualitative data collection, participant observation is also one of the most demanding. It is the method of data collection that involves watching and noting of behaviours or activities of the research subjects that are of interest to the researcher. It requires that the researcher become a participant in the culture or context being observed. Participant observation often requires months or years of intensive work because the researcher needs to become accepted as a natural part of the culture in order to assure that the observations are of the natural phenomenon.

**DOCUMENT REVIEW:**

Document review is a way of collecting data by reviewing existing documents. The documents may be internal to a program or organization (such as records of what components of an asthma management program were implemented in schools) or may be external (such as records of emergency room visits by students served by an asthma management program).

Focus groups:

A focus group is a group interview of approximately six to twelve people who share similar characteristics or common interests. A focus group discussion are rapid assessment, semi-structured data gathering methods in which a purposively selected set of participants gather to discuss issues and concerns based on a list of key themes drawn up by the researcher. A facilitator guides the group based on a predetermined set of topics. The facilitator creates an environment that encourages participants to share their perceptions and points of view. Focus groups are a qualitative data collection method, meaning that the data is descriptive and cannot be measured numerically.

Advantages:

* Quick and relatively easy to set up.
* The group dynamic can provide useful information that individual data collection does not provide.
* Is useful in gaining insight into a topic that may be more difficult to gather through other data collection methods.

Disadvantages:

* Susceptible to facilitator bias.
* The discussion can be dominated or sidetracked by a few individuals.
* Data analysis is time consuming and needs to be well planned in advance.
* Does not provide valid information at the individual level.
* The information is not representative of other groups.