7 Methods of primary data collection

Methods of data collection are important aspects to consider when designing a research process because they can substantially influence the rigor of the research results (Sekaran, 1992). The main data-collection methods used in the survey research are interviewing, administering questionnaires and observing people and phenomena (Easterby- Smith et al., 1991). The choice of data-collection methods depends on the facilities available to the researcher, the extent of accuracy required, the expertise of the researcher, the time span of the study, costs and other resources associated with and available for data gathering (Sekaran, 1992). All methods of data collection have their advantages and disadvantages. Although there is no absolute rule of what method should be used in the study, the choice of a particular method is largely determined by the conceptual framework, research questions, research strategy and sampling criteria adopted in the research (Shaughnessy and Zechmeister, 1990; Robson, 1993). The constraints of available time and resources have to be considered as well. To overcome the limitations of each method, collecting data through multi-methods and from multi-sources is often more appropriate.

There is a growing support for the use of the multi-method research approach that combines the use of quantitative and qualitative research methods within the same study (Moser and Kalton, 1971; Sekaran, 1992; Robson, 1993). The reason is that the multi-method approach lends rigor to the research (Sekaran, 1992) and increases confidence in data validity (Robson, 1993). Brewer and Hunter (1989) see the multi-method approach as a way of approaching a research problem with a combination of methods that have non-overlapping weaknesses in addition to their complementary strengths. However, some researchers (Brewer and Hunter, 1989; Sekaran, 1992; Robson, 1993) have noticed that multiple methods raise their own theoretical problems and may not be suitable for all research purposes. They may, in some cases, be more costly and time consuming and thus impracticable. In any case, the method used to collect the data must be suitable for investigating the problem of the interest, appropriate to the studied population and samples, and it should be reasonably reliable and objective (Moser and Kalton, 1971; Simova, 2010b).

Data obtained by the research should be:

- Relevant to the explored problem,
- Valid, i.e. we measure what we want to measure,
- Reliable, correct and true, in other words, we would get approximately the same results when repeating a research again.
- Efficient, i.e. the data is obtained relatively fast and low costs (Simova, 2010a).

There are several methods that can be used to collect primary data. The choice of a method depends on the purpose of the study, the resources available and the skills of a researcher (Kumar, 2011, p. 140). **The methods of primary data collection are:**

- **observation**
- **interview**
- **questionnaire.**

7.1 Collecting primary data by observation

The data is collected by observation of people, activities or situation(s) without asking any questions. The dada is collected without any active participation of respondents by watching and recording frequency or a course of a situation related to the explored phenomena.

Observation is a purposeful, systematic and selective way of watching and listening to an interaction of phenomenon as it takes place. It is a process of learning and recording of a sensually perceived reality without any interaction (Simova, 2010a; Kumar, 2011, p. 140).

It is appropriate in situations when we are more interested in the behaviour than in the perceptions of individuals, or when subjects are so involved in the interaction that they are unable to provide objective information about it. The scientific observation can be conducted only under precisely specified conditions in a specific and maximally objective way. It is possible to observe only present situations or behaviour. In contrast to other methods, it is not

possible to explore past or future behaviour or actions. It is important to state exactly specified categories of observation (what should be observed) in advance (Simova, 2010a).

This method can be used to observe e.g.:

- customer shopping behaviour and reactions
- competitive pricing, products and promotion
- number of customers in a shop, at a certain place or event
- customer reactions to a new product or a brand, and its place in a shop

The advantage of observation is that data can be obtained independently from willingness of respondents to provide the data. However, the data is of a descriptive character. The disadvantage of this method is that the data related to causes, attitudes, relationships or perceptions can not be obtained by this method. The disadvantage of this method or its techniques can be that the method is financially and/or technically an exacting task or even time-consuming. Sometime, data can be subjectively distorted by observer bias. What is more, the interpretations drawn from observations may vary from observer to observer. (Simova, 2010a; Kumar, 2011, p. 141). Unfortunately, there is no easy way to verify the observations and the inferences drawn from them. There is a possibility that when individuals or groups become aware that they are observed, they may change their behaviour. In this case, what is observed may not represent the reality (their normal behaviour) and the data is distorted. There is also the possibility of incomplete observation and/or recording. The observer can miss some details or interactions.

7.1.1 Types and techniques of observation

There are a few types and techniques of observation that can be used.

The observation can be conducted as:

- **Participant observation –** a researcher participates in the activities of the group being observed in the same way as its members, with or without them knowing that they are being observed.

- **Non-participant observation** – a researcher is not involved in the activities of the group being observed, but remains a passive observer, watching and listening to its activities and drawing conclusions from this.

Based on the way of recording, the observation can be recorded:

- **Mechanically or electronically** using devices such as cameras, videotapes, counting devices, psychogalvanometer or other devices.
- Personally – using observer´s senses and skills.

Observation can be:

- **Structured –** the way of observation when what should be observed, categories to which the observed activities will be classified, ways and conditions of observation, way of recording and the role/acting of observer, are exactly stated in advance. The obtained data is of quantitative character and easy to process and analyse.
- **Unstructured –** it is an observation where the situation or behaviour of people is observed as a whole. All is known is the objective of observation and the rest (what is observed and how) depends on the observer. This way of observation is more complicated. It puts higher demand on observation skills of observer, his/her skills of analysis and interpretation. For this reason, it is not used so often. If so, only for exploratory research.

Observation can be made under:

- **Natural conditions** – observing in a natural environment without intervening in its activities.
- **Controlled conditions –** observing when introducing a stimulus to the group for it to react to. Usually all factors in a controlled environment are constant, but one (stimulus) of them is changing. Reactions of individuals or a group to the stimulus is observed.

Observation can be:

- **Apparent –** individuals or a group is aware of being observed
- **Hidden** - individuals or a group is not aware of being observed.

- **Direct** – observation of an activities or situations as they happen, e.g. observation of a behaviour, reaction.
- **Indirect** – observation of the consequences, outputs, results of activities or behaviour (Simova, 2010a, Kumar, 2011, p. 140-143).

7.2 Collecting primary data by interview

Interview is a commonly used method of collecting data. It is based on an interaction of the interviewer with others (respondents).

An interview involves an interviewer reading questions to respondents and recoding their answers. It is a verbal interchange, in which an interviewer tries to elicit information from another person. Any person-to-person interaction, either face-to-face or otherwise, between two or more individuals with a specific purpose in mind is called interviewing (Kumar, 2011, p. 144).

Interview can be:

- **Structured** – the researcher asks a predetermined set of questions, using the same wording and order of questions specified in the interview schedule. An interview schedule is a written list of questions, prepared for use by an interviewer in a person-to-person interaction. The structured interview provides uniform information that enables comparability of data. It requires fewer interviewing skills than does unstructured interview.
- **Unstructured** – the researcher has almost complete freedom in terms of content and structure of asked questions, in wording and the way he/she explains the questions to respondents. He/she may formulate questions and rise the topic depending on what occurs in the discussion. Unstructured interview can be used in both, quantitative and qualitative research (Simova, 2010a).

7.3 Collecting primary data by questionnaire

A questionnaire is a written list of questions. Answers are recorded by respondents. The only difference between an interview (schedule) and a questionnaire is that in the former it is the interviewer who asks the questions and records the answers, and in the later, answers are recorder by the respondents themselves.

7.3.1 Techniques of administering questionnaire

The choice of the way of questionnaire administration depends on the character of the collected data, its extent and availability. It is also a matter of the research, its extent and time and financial possibilities of the research study. A questionnaire can be administered in the following ways:

- Personally face-to-face
- By telephone
- By mail (or electronically)

Each of these techniques has its advantages and disadvantages. It is common that these techniques can be combined.

- **Questionnaire administered personally –** data is collected by the researcher face-to-face with a respondent. The respondent is asked to fill the questionnaire. This technique is widely used. It brings the immediate reaction and response in a relatively short time. It allows to ask various questions and use illustrative materials such as picture, photos, models or techniques such as brainstorming, projective techniques and others. The disadvantage of this technique is that is highly in demand of costs, preparation and data collection organisation, and researchers. It loses anonymity, which may bring data distortion or lowers the willingness of respondents to answer the questions. There is also a risk that the answers may be influence by the researchers.

- **Questionnaire administered by mail –** the questionnaire is sent to respondents by mail. This techniques can be use only if we have an access to respondents´ addresses. Mailed questionnaire must be accompanied by a covering letter and send with a prepaid self-addressed envelope to motivate respondents to fill the questionnaire. The problem of this

technique sis very low response rate. The questions have to be rather simple and understandable as there is no possibility to explain the questions to respondents. Respondents decide where and when, if so, fill the questionnaire. However, it is possible to contact a large population with a relatively low cost. The cost can be low if the questionnaire is administered electronically. Electronically administered questionnaire, provided respondent has an access to a computer and internet, allows quick, simple a cheap way of data collection as well as its further processing and analysis. There is no need to put data into computer. A connection to on-line server immediately enables recording of answers and provides results of a preliminary analysis.

- **Questionnaire administered by telephone** – communication with respondents is (questions are asked) by telephone. It is a fast and simple way of collecting data from a large population, provided we have their telephone numbers. Questions and the questionnaire itself should not be long. The willingness of respondents to provide information can be low since they are usually disturbed by a phone call and do not have time to answer the questions (Simova, 2010a, Kumar, 2011, p. 144-145).

The advantages and disadvantages of the ways of administering questionnaires are shown in Table 1.

Table 1: Comparison of the ways of administering questionnaires

	Mail	**Personally**	**Telephone**
Costs	Lowest	High	Moderate
Time consumption	Low	High	It depends on the number of phone calls
Response rate	low	High	Relatively high
Contact with respondents	None	Close	Not very close
Use in quantitative research	Limited	High	Relatively high
Speed of getting data	Moderate	Moderate	High

Source: Přibova a kol., 1996, p. 50

The choice of a method or technique of collecting data can considerably influence the quality of obtained data. There are some criteria for selecting an appropriate method, however all

methods have their advantages and disadvantages. Collecting data by in-depth interview is very time consuming and impracticable to use for many respondents, the interview with a structured questionnaire is more appropriate (Easterby-Smith et al., 1992). The structured interview based on predetermined and standardised questions can be used e.g. to identify general patterns in the behaviour of respondents. The personal interview achieves a higher response rate rather than using mail or telephone questionnaires. It also provides more control over who answered the questions.

Since administering *questionnaires* to large numbers of individuals simultaneously is less expensive and less time consuming than interviewing, the questionnaire can be used instead.

Data collected by interviewer-administered questionnaires allows obtaining responses from a large number of individuals within a short period of time in a less expensive and less time consuming way than interviewing (Sekaran, 1992). This way of data collection also provides better control of data collection, and derives more complete and correctly recorded responses than the self-administered questionnaire (Bourque and Clark, 1992).

In practise more and more often, a combination of methods is applied in the research (Robson, 2002). All three methods of data collection - *observation, interview and questionnaire* can be used in the surveys and applied for different purposes in the research study. The research can apply a combination of research methods derived from both positivistic and phenomenological research approaches using quantitative and qualitative methods of data collection as complementary rather than alternatives in the study.

New technologies also play an important role in the data collection methods. Systems such as CATI (administering questionnaires by telephone), CAPI (personal interviews) and CAWI (research by internet) are used more and more often (Simova, 2010a).

Summary

Methods of data collection are important aspects to consider when designing a research process because they can substantially influence the rigor of the research results. The main data-collection methods used in the survey research are interviewing, administering questionnaires and observing people and phenomena. The choice of data-collection methods depends on the facilities available to the researcher, the extent of accuracy required, the expertise of the researcher, the time span of the study, costs and other resources associated with and available for data gathering. All methods of data collection have their advantages and disadvantages. Although there is no absolute rule of what method should be used in the study, the choice of a particular method is largely determined by the conceptual framework, research questions, research strategy and sampling criteria adopted in the research. The constraints of available time and resources have to be considered as well. To overcome the limitations of each method, collecting data through multi-methods and from multi-sources is often more appropriate.

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