



## Data collection tools and techniques

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### Abstract

*Data is distinct pieces of information, usually formatted in a special way. Collection of data constitutes the first step in a statistical investigation. Utmost care must be exercised in collecting data as because they form the foundation of statistical method. If data are faulty, the conclusion drawn can never be reliable. Data collection is a methodical process of gathering and analyzing specific information to proffer solutions to relevant questions and evaluate the results. It focuses on finding out all there is to a particular subject matter. Data is collected to be further subjected to hypothesis testing which seeks to explain a phenomenon. Data collection tools refer to the devices/instruments used to collect data, such as a paper questionnaire or computer-assisted interviewing system. Case Studies, Checklists, Interviews, Observation sometimes, and Surveys or Questionnaires are all tools used to collect data. The data collection methods that come under qualitative type include Interviews, Focus Groups, and Document analysis. Different data collection strategies include Case Studies, Usage data, Checklists, Observation, Interviews, Focus Groups, Surveys, and Document analysis. This full length paper highlights the importance of data collection in the field of research, how to collect authentic and also highlights the different types of data collection tools and techniques with their appropriate usage.*

**Key words:** *Case Studies, Checklists, Observation, Interviews, Focus Groups, Surveys, and Document analysis*

### Introduction

Data is raw information and images. Qualitative data collection methods include interviews, focus groups, and data analysis. Different data collection techniques include case studies, case studies, surveys, observations, interviews, focus groups, surveys and statistics.

Data collection tools refer to tools/devices used to collect data such as surveys or computer-based interviews. Case studies, surveys, interviews, sometimes observations, and surveys or surveys are all tools used to collect data.

## Methods Of Data Collection

*They are as follows :*

- **Observation:** Observation method has occupied an important place in descriptive sociological research.
- **Interview:** In this method of data collection that involves two or more people exchanging information through a series of questions and answers. The questions are designed by a researcher to elicit information from interview participants on a specific topic or set of topics.
- **Schedule:** Schedule method of data collection. Under this method a schedule is prepared which is a set of predetermined questions in a sequence and an enumerator contact the respondents for filling in the schedules by asking them the questions of the schedule and putting them in the space provided.
- **Questionnaire:** A questionnaire is a list of questions or items used to gather data from respondents about their attitudes, experiences, or opinions. Questionnaires can be used to collect quantitative and/or qualitative information.
- **Projective Techniques:** Projective techniques are many ways to assess a person's personality that rely on a predetermined sequence of random inputs to elicit the subject's frequently peculiar answers.
- **Case Study Method:** A case study is a detailed study of a specific subject, such as a person, group, place, event, organization, or phenomenon. Case studies are commonly used in social, educational, clinical, and business research.
- **Word Association:** The researcher offers the respondent a set of words and asks them what comes to their mind after hearing every word.
- **Role-playing:** In this data collection tool the respondents are provided with an imaginary situation and asked how they would react.
- **Sentence Completion:** In this data collection tool the respondents are asked to finish incomplete sentences so that the interviewer gets an idea about their ideas.
- **In-Person Survey:** The interviewer asks face-to-face questions to the respondent.
- **Online Surveys:** The interviewer asks questions to the respondent via online or web platforms.
- **Mobile Surveys:** An interviewer asks questions to the respondents via SMS or mobile apps.

**Data** collection and analysis **tools** are defined as a series of charts, maps, and diagrams designed to collect, interpret, and present **data** for a wide range of applications and **Data collection techniques** include interviews, observations (direct and participant), questionnaires, and relevant documents (Yin, 2014). In case study research, the **data collected** are usually qualitative (words, meanings, views) but can also be quantitative (descriptive numbers, tables) industries.

Primary **data sources** include information **collected** and processed directly by the researcher, such as observations, surveys, interviews, and focus groups. Secondary **data sources** include information retrieved through preexisting **sources**: research articles, Internet or library searches,

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## **Sources of Data Collection**

### **Primary Data Collection**

Primary data collection by definition is the gathering of raw data collected at the source. It is a process of collecting the original data collected by a researcher for a specific research purpose. It could be further analyzed into two segments; qualitative research and quantitative data collection methods.

### **Secondary Data Collection**

Secondary data are basically second-hand pieces of information. These are not gathered from the source as the primary data. To put it in other words, the secondary data are those that are already collected. So, these are comparatively less reliable than the primary data. Secondary data is easier to collect, and the process is less expensive than the primary methods of data collection.

It can be gathered from different sources which can be categorised into two categories. These are as follows:

1. Published sources
2. Unpublished sources

### **Types of Data Collection**

Before broaching the subject of the various types of data collection. It is pertinent to note that data collection in itself falls under two broad categories; Primary data collection and secondary data collection.

- **Qualitative Research Method**

The qualitative research methods of data collection does not involve the collection of data that involves numbers or a need to be deduced through a mathematical calculation, rather it is based on the non-quantifiable elements like the feeling or emotion of the researcher. An example of such a method is an open-ended questionnaire.



Some examples of qualitative data collection and research include:

- ❖ Observations
- ❖ Survey
- ❖ Focus Groups
- ❖ Interviews

### Quantitative Method

Quantitative methods are presented in numbers and require a mathematical calculation to deduce. An example would be the use of a questionnaire with close-ended questions to arrive at figures to be calculated Mathematically. Also, methods of correlation and regression, mean, mode and median.



### Importance of Data Collection

- ❖ Data collection is essential for research. Researchers utilize various data collection tools to gather and analyze information. This information can be used to answer questions, test hypotheses, or make predictions.

- ❖ Skill of decision-making can be improved by the use of Data collection. Gathering information about a problem helps decision-makers make better choices on how to address it.
- ❖ Data collection helps businesses make informed decisions by providing relevant information.
- ❖ Data collection allows the evaluation of performance, identifying strengths and areas for improvement.
- ❖ Accurate data collection tools aid in strategic planning and forecasting future trends.

### **Importance of Data Collection Tools**

The importance of Data collection tools are as follows:

- It can organize the results of the research work.
- It can help us to work with collaboration with co-workers in developing the tools like questionnaire.
- It can save time and resources throughout the research work.
- It can help to create documents and monitor the results.
- It helps to generate reports all on one platform.
- It helps to access accurate information.
- It protects the integrity of research work.
- It helps to provide references for future research work.

### **Challenges Faced in Data Collection**

Some common challenges faced during data collection are as follows:

- Poor data quality
- Discrepancies between sources
- Data downtime
- Errors in large databases lead to ambiguous data
- Duplicate and overlapping data available on different sources
- Presence of excessive data
- Inaccurate data

- Hidden data
- Low response from surveys or interviews and other issues while researching

## Conclusion

Data collection is a slow process and enough care must be taken while collecting the same. Regardless of the utilised tool of data collection in the study, the goal of the observer/researcher at all times must be focused on the objectives of the study and data should be collected in the relevant fields only. The tools to be used for the collection depends on the objective of the study and can be classified into primary methods for data collection and secondary methods of data collection.

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