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# Research Methodologies : Trends and Techniques

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**ABSTRACT:** Research methods are different from research methodologies because they are the ways in which you will collect the data for your research project. The best method for your project largely depends on your topic, the type of data you will need, and the people or items from which you will be collecting data. The following boxes below contain a list of quantitative, qualitative, and mixed research methods. Closed-ended questionnaires/survey: These types of questionnaires or surveys are like "multiple choice" tests, where participants must select from a list of premade answers. According to the content of the question, they must select the one that they agree with the most. This approach is the simplest form of quantitative research because the data is easy to combine and quantify. Structured interviews: These are a common research method in market research because the data can be quantified. They are strictly designed for little "wiggle room" in the interview process so that the data will not be skewed. You can conduct structured interviews in-person, online, or over the phone .

**KEYWORDS:** research methods, trends, techniques, quantitative, qualitative, interviews, data, survey, questionnaires

## I. INTRODUCTION

### Constructing Questionnaires

When constructing your questions for a survey or questionnaire, there are things you can do to ensure that your questions are accurate and easy to understand :

- Keep the questions brief and simple.
- Eliminate any potential bias from your questions. Make sure that they do not word things in a way that favor one perspective over another.
- If your topic is very sensitive, you may want to ask indirect questions rather than direct ones. This prevents participants from being intimidated and becoming unwilling to share their true responses.<sup>1</sup>
- If you are using a closed-ended question, try to offer every possible answer that a participant could give to that question.
- Do not ask questions that assume something of the participant. The question "How often do you exercise?" assumes that the participant exercises (when they may not), so you would want to include a question that asks if they exercise at all before asking them how often.<sup>2</sup>
- Try and keep the questionnaire as short as possible. The longer a questionnaire takes, the more likely the participant will not complete it or get too tired to put truthful answers.
- Promise confidentiality to your participants at the beginning of the questionnaire.

### Quantitative Research Measures

When you are considering a quantitative approach to your research, you need to identify why types of measures you will use in your study. This will determine what type of numbers you will be using to collect your data. There are four levels of measurement:

- **Nominal:** These are numbers where the order of the numbers do not matter. They aim to identify separate information. One example is collecting zip codes from research participants. The order of the numbers does not matter, but the series of numbers in each zip code indicate different information .<sup>3</sup>

- **Ordinal:** Also known as rankings because the order of these numbers matter. This is when items are given a specific rank according to specific criteria. A common example of ordinal measurements include ranking-based questionnaires, where participants are asked to rank items from least favorite to most favorite. Another common example is a pain scale, where a patient is asked to rank their pain on a scale from 1 to 10
- **Interval:** This is when the data are ordered and the distance between the numbers matters to the researcher . The distance between each number is the same. An example of interval data is test grades.
- **Ratio:** This is when the data are ordered and have a consistent distance between numbers, but has a "zero point." This means that there could be a measurement of zero of whatever you are measuring in your study An example of ratio data is measuring the height of something because the "zero point" remains constant in all measurements. The height of something could also be zero.<sup>4</sup>

### Qualitative research methods

#### Focus Groups

This is when a select group of people gather to talk about a particular topic. They can also be called discussion groups or group interviews (Dawson, 2019). They are usually lead by a moderator to help guide the discussion and ask certain questions. It is critical that a moderator allows everyone in the group to get a chance to speak so that no one dominates the discussion. The data that are gathered from focus groups tend to be thoughts, opinions, and perspectives about an issue.<sup>5</sup>

#### Advantages of Focus Groups

- Only requires one meeting to get different types of responses.
- Less researcher bias due to participants being able to speak openly.
- Helps participants overcome insecurities or fears about a topic.
- The researcher can also consider the impact of participant interaction.<sup>6</sup>

#### Disadvantages of Focus Groups

- Participants may feel uncomfortable to speak in front of an audience, especially if the topic is sensitive or controversial.
- Since participation is voluntary, not every participant may contribute equally to the discussion.
- Participants may impact what others say or think.
- A researcher may feel intimidated by running a focus group on their own.
- A researcher may need extra funds/resources to provide a safe space to host the focus group.
- Because the data is collective, it may be difficult to determine a participant's individual thoughts about the research topic.<sup>7</sup>

#### There are two ways to conduct research observations:

- **Direct Observation:** The researcher observes a participant in an environment. The researcher often takes notes or uses technology to gather data, such as a voice recorder or video camera. The researcher does not interact or interfere with the participants. This approach is often used in psychology and health studies .
- **Participant Observation:** The researcher interacts directly with the participants to get a better understanding of the research topic. This is a common research method when trying to understand another culture or community. It is important to decide if you will conduct a covert (participants do not know they are part of the research) or overt (participants know the researcher is observing them) observation because it can be unethical in some situations .<sup>8</sup>

### Open-Ended Questionnaires

These types of questionnaires are the opposite of "multiple choice" questionnaires because the answer boxes are left open for the participant to complete. This means that participants can write short or extended answers to the questions. Upon gathering the responses, researchers will often "quantify" the data by organizing the responses into different categories. This can be time consuming because the researcher needs to read all responses carefully.

### Semi-structured Interviews

This is the most common type of interview where researchers aim to get specific information so they can compare it to other interview data. This requires asking the same questions for each interview, but keeping their responses flexible. This means including follow-up questions if a subject answers a certain way. Interview schedules are commonly used to aid the interviewers, which list topics or questions that will be discussed at each interview<sup>8</sup>

### Theoretical Analysis

Often used for nonhuman research, theoretical analysis is a qualitative approach where the researcher applies a theoretical framework to analyze something about their topic. A theoretical framework gives the researcher a specific "lens" to view the topic and think about it critically. It also serves as context to guide the entire study. This is a popular research method for analyzing works of literature, films, and other forms of media. You can implement more than one theoretical framework with this method, as many theories complement one another.<sup>9</sup>

Common theoretical frameworks for qualitative research are :

- Behavioral theory
- Change theory
- Cognitive theory
- Content analysis
- Cross-sectional analysis
- Developmental theory
- Feminist theory
- Gender theory
  
- Marxist theory
- Queer theory
- Systems theory
- Transformational theory<sup>10</sup>

### Unstructured Interviews

These are in-depth interviews where the researcher tries to understand an interviewee's perspective on a situation or issue. They are sometimes called life history interviews. It is important not to bombard the interviewee with too many questions so they can freely disclose their thoughts.<sup>11</sup>

## II. DISCUSSION

### Mixed method approach

- **Open-ended and closed-ended questionnaires:** This approach means implementing elements of both questionnaire types into your data collection. Participants may answer some questions with premade answers and write their own answers to other questions. The advantage to this method is that you benefit from both types of data collection to get a broader understanding of you participants. However, you must think carefully about how you will analyze this data to arrive at a conclusion.

Other mixed method approaches that incorporate quantitative and qualitative research methods depend heavily on the research topic. It is strongly recommended that you collaborate with your academic advisor before finalizing a mixed method approach.<sup>12</sup>

### Selecting the best research method

How do you determine which research method would be best for your proposal? This heavily depends on your research objective. According to researchers there are several questions to ask yourself when determining the best research method for your project:

- Are you good with numbers and mathematics?
- Would you be interested in conducting interviews with human subjects?
- Would you enjoy creating a questionnaire for participants to complete?
- Do you prefer written communication or face-to-face interaction?
- What skills or experiences do you have that might help you with your research? Do you have any experiences from past research projects that can help with this one?
- How much time do you have to complete the research? Some methods take longer to collect data than others.
- What is your budget? Do you have adequate funding to conduct the research in the method you want?
- How much data do you need? Some research topics need only a small amount of data while others may need significantly larger amounts.
- What is the purpose of your research? This can provide a good indicator as to what research method will be most appropriate.<sup>13</sup>

### A few characteristics of quantitative research are:

- **Quantitative Data:** As discussed above, quantitative research employs the use of quantitative data that is generally represented using charts, tables, or graphs.
- **Closed-Ended Questions:** When gathering data for quantitative research, researchers will generally use closed-ended questions as they help gather quantitative data more effectively than open-ended questions.
- **Large Sample Sizes:** Quantitative research is conducted using large, or significant, sample sizes that are representative of the target population.
- **High External Validity:** Quantitative studies are often highly generalizable due to the representative sample sizes used.<sup>14</sup>

### A few characteristics of qualitative research are:

- **Open-Ended Questions:** When gathering qualitative data, researchers often make use of open-ended questions that help gather comprehensive textual data on a subject.
- **Complex Reasoning:** The data analysis techniques used in the qualitative research methodology are generally less straightforward when compared to quantitative research methods and require the use of complex reasoning and interpretation.

**Researcher/Moderator Plays an Important Role:** When gathering data for qualitative research studies, the researchers and moderators play an important role in influencing the reliability and quality of the data gathered. Additionally, qualitative data is more subject to interpretation than quantitative data and therefore the researcher's observations and interpretations will significantly affect the quality of the study.<sup>15</sup>

## III. RESULTS

### Methodology vs. Methods

The confusion between “methodology” and “methods” in research is a common occurrence, especially with the terms sometimes being used interchangeably. Methods and methodology in the context of research refer to two related but different things: method is the technique used in gathering evidence; methodology, on the other hand, “is the underlying theory and analysis of how a research does or should proceed”. Researchers define methodology as “a set of principles and ideas that inform the design of a research study.” Meanwhile, methods are “practical procedures used to generate and analyze data”<sup>16</sup>. To summarize these definitions, methods cover the technical procedures or steps taken

to do the research, and methodology provides the underlying reasons why certain methods are used in the process. Traditionally, academic researchers often approach research studies through two distinct paradigms, namely positivistic and phenomenological. Also sometimes called qualitative and quantitative positivistic and phenomenological approaches play a significant role in determining your data gathering process, especially the methods you are going to use in your research. Research methods lay down the foundation of your research. According to Neil McInroy, the chief executive of Centre for Local Economic Strategies, not using the appropriate research methods and design creates “a shaky foundation to any review<sup>17</sup>, evaluation, or future strategy. In any type of research, the data you will gather can come either in the form of numbers or descriptions, which means you will either be required to count or converse with people. In research, there are two fundamental methods used for either approach—quantitative and qualitative research methods. Even if you take the path of a philosophy career, these are still methods that you may encounter and even use<sup>18</sup>.

### How to write an effective methodology section

- **Introduce your methods.** Introduce the methodological approach used in investigating your research problem. In one of the previous sections, your methodological approach can either be quantitative, qualitative, or mixed methods.
- **Establish methodological connection.** Explain the relevance of your methodological approach to the overall research design. Keep in mind that the connection between your methods and your research problem should be clear. This means that your methodology must be appropriate to achieve your research paper’s objective—to address the research problem you presented. To wit, if you need help to write your research problem.
- **Introduce your instruments.** Indicate the instruments you are going to use in collecting your data and explain how you are going to use them. These tools and instruments can be your surveys, questionnaires for interviews, observation, etc. If your methods include archival research or analyzing existing data, provide background information for documents, including who the original researcher is, as well as how the data were originally created and gathered.<sup>19</sup>
- **Discuss your analysis.** Explain how you are going to analyze the results of your data gathering process. Depending on the methods you use, you can use statistical analysis or explore theoretical perspectives to support your explanation of observed behaviors.
- **Provide background information.** When using methods that your readers may be unfamiliar with, make sure to provide background information about these methods.
- **Discuss sampling process.** Explain the reason behind your sampling procedure. For example, if you are using statistics in your research, indicate why you chose this method as well as your sampling procedure. If you are going to do interviews, describe how are you going to choose the participants and how the interviews will be conducted.
- **Address research limitations.** Make sure to address possible limitations you may encounter in your research, such as practical limitations that may affect your data gathering process. If there are potential issues you anticipate to encounter in the process, indicate your reason why you still decide to use the methodology despite the risk.<sup>20</sup>

### What to avoid in writing the methodology section of your research

- Avoid including irrelevant details.
- Keep your methodology section straightforward and thorough. Details that do not contribute to the readers’ understanding of your chosen methods should not be included in your methodology section.<sup>21</sup>
- Irrelevant information includes unnecessary explanations of basic procedures. Basic procedures should only be explained if they are unconventional and unfamiliar to the readers.
- Do not ignore the problems you might encounter during the data gathering process. Instead of turning a blind eye, describe how you handled them<sup>22</sup>

#### IV. CONCLUSIONS

Researchers must adhere to ethical norms to ensure trust, accountability, mutual respect, and fairness. According to researchers, there are some ethical considerations that researchers must be mindful of, especially during the process of gathering and presenting research data:

- The rights to privacy of the individuals involved.
- The nature of participation in the research must be voluntary and the individuals involved must have the right to withdraw partially or completely from the process.
- All participants must provide their consent first.
- Maintenance of the confidentiality of data provided by individuals as well as identifiable participants' anonymity.
- How participants react to the researchers' methods in seeking to collect data.
- How the participants will be affected by the way in which data is analyzed and reported.
- The behavior and objectivity of the researcher.<sup>23</sup>

It's now clear that the methodology section is where a researcher indicates and elaborates on the plans that must be put into motion in order to achieve the objective of the research. Being acquainted with research methodologies, however, does not make choosing the appropriate methodology easier. Researchers state that selecting which research methodology is a difficult step in the research process. It can be confusing and overwhelming, especially for novice researchers. Even if you are aiming for a career in the humanities and social sciences, having a clear research methodology is still essential.<sup>24</sup> According to authors, research should not only be "methodologically led" but the choice of which methodology to use should be consequential not only to the social science phenomenon to be investigated but also to the philosophical stance of the researcher. Similarly, author claims that the choice of methodology should be based on the researcher's interests, beliefs, and convictions. Meanwhile, other significant factors such as epistemological concerns must also be taken into consideration when choosing a research methodology. On top of philosophical underpinnings and personal convictions, there are also practical considerations that can affect a researcher's decision on what methodology to use, including the amount of existing data or knowledge, available time, and other resources.<sup>25</sup>

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