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 ASSIGNMENT

Explain the various research methods and how they can be applied.

 There are many types of research methods. Different methods are used depending on the type of research being pursued. Research methods in science are based on what is known as the scientific method. The scientific method is the basic process that all researchers follow when exploring a specific topic. These methods are important since an individual’s beliefs can influence how she interprets certain phenomena. By using these specific methods, researchers can reduce mistakes based on their own biases or prejudices.

1. The Scientific Method

All research methods are based on the scientific method. The scientific method has four primary components. The process begins with a basic observation and description of a phenomenon. Observations lead researchers to have questions about why certain phenomena occur. Researchers then put forth a hypothesis, or prediction, of what will happen or what the outcome of certain phenomena will be. Researchers then conduct specific types of experiments meant to prove or disprove this prediction.

CHARACTERISTICS OF SCIENTIFIC METHOD OF RESEARCH.

## Empirical Observation

The scientific method is empirical. That is, it relies on direct observation of the world, and disdains hypotheses that run counter to observable fact. This contrasts with methods that rely on pure reason (including that proposed by Plato) and with methods that rely on emotional or other subjective factors.

## B.Replicable Experiments

Scientific experiments are replicable. That is, if another person duplicates the experiment, he or she will get the same results. Scientists are supposed to publish enough of their method so that another person, with appropriate training, could replicate the results. This contrasts with methods that rely on experiences that are unique to a particular individual or a small group of individuals.

## C.Provisional Results

Results obtained through the scientific method are provisional; they are (or ought to be) open to question and debate. If new data arise that contradict a theory, that theory must be modified. For example, the phlogiston theory of fire and combustion was rejected when evidence against it arose.

## D .Objective Approach

The scientific method is objective. It relies on facts and on the world as it is, rather than on beliefs, wishes or desires. Scientists attempt (with varying degrees of success) to remove their biases when making observations.

## E .Systematic Observation

Strictly speaking, the scientific method is systematic; that is, it relies on carefully planned studies rather than on random or haphazard observation. Nevertheless, science can begin from some random observation. Isaac Asimov said that the most exciting phrase to hear in science is not "Eureka!" but "That's funny." After the scientist notices something funny, he or she proceeds to investigate it systematically.

1. Quantitative Methods

Quantitative research methods vary; however, they follow the scientific method closely. Quantitative methods are concerned with conducting experiments in the interest of investigating a specific hypothesis. A hypothesis is a prediction about a phenomenon, which states how two things are related. These are referred to as the independent and dependent variables. Experiments look at the relationships between these variables with the goal of discovering what the cause of the phenomena is.

Quantitative research deals in numbers, logic, and an objective stance. Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning [i.e., the generation of a variety of ideas about a research problem in a spontaneous, free-flowing manner].

**Its main characteristics are**:

* The data is usually gathered using structured research instruments.
* The results are based on larger sample sizes that are representative of the population.
* The research study can usually be replicated or repeated, given its high reliability.
* Researcher has a clearly defined research question to which objective answers are sought.
* All aspects of the study are carefully designed before data is collected.
* Data are in the form of numbers and statistics, often arranged in tables, charts, figures, or other non-textual forms.
* Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships.
* Researcher uses tools, such as questionnaires or computer software, to collect numerical data.

The overarching aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

TYPES OF QUANTITATIVE RESEARCH METHODS

### [Primary Quantitative Research Methods](https://www.questionpro.com/blog/quantitative-research/)

There are four different types of quantitative research methods:

Primary quantitative research is the most widely used method of conducting [market research](https://www.questionpro.com/blog/what-is-market-research/). The distinct feature of [primary research](https://www.questionpro.com/blog/primary-research/) is that the researcher focuses on collecting data directly rather than depending on data collected from previously done research. Primary quantitative research can be broken down into three further distinctive tracks, as well as the process flow. They are:

1. Survey research
2. Correlational research
3. Casual comparative research
4. Experimental research

### [Secondary Quantitative Research Methods](https://www.questionpro.com/blog/quantitative-research/)

Secondary quantitative research or desk research is a [research](https://www.questionpro.com/blog/what-is-research/) method that involves using already existing data or [secondary data](https://www.questionpro.com/blog/secondary-research/). Existing data is summarized and collated to increase the overall effectiveness of research.

This research method involves the collection of [quantitative data](https://www.questionpro.com/blog/quantitative-data/) from existing data sources like the internet, government resources, libraries, research reports, etc. Secondary quantitative research helps to validate the data that is collected from primary quantitative research as well as aid in strengthening or proving or disproving previously collected data.

Following are five popularly used secondary quantitative research methods

1. **Data available on the internet:** With the high penetration of internet and mobile devices, it has become increasingly easy to conduct quantitative research using the internet. Information about most research topics is available online, and this aids in boosting the validity of primary [quantitative data](https://www.questionpro.com/blog/quantitative-data/) as well as proving the relevance on previously collected data.
2. **Government and non-government sources:** Secondary quantitative research can also be conducted with the help of government and non-government sources that deal with [market research](https://www.questionpro.com/blog/what-is-market-research/) reports. This data is highly reliable and in-depth and hence, can be used to increase the validity of quantitative research.
3. **Public libraries:**Now a sparingly used method of conducting quantitative research, it is still a reliable source of information though. Public libraries have copies of important research that were conducted earlier. They are a storehouse of valuable information and documents from which information can be extracted.
4. **Educational institutions:**Educational institutions conduct in-depth [research](https://www.questionpro.com/blog/what-is-research/) on multiple topics, and hence, the reports that they publish are an important source of validation in quantitative research.
5. **Commercial information sources:** Local newspapers, journals, magazines, radio, and TV stations are a great source to obtain data for secondary quantitative research. These commercial information sources have in-depth, first-hand information on economic developments, political agenda, market research, demographic segmentation, and similar subjects.
6. Qualitative Methods

## Unlike quantitative methods, qualitative methods are not based on a prediction between two variables. Rather, qualitative methods are used to openly explore a specific topic. These methods are particularly useful for looking at topics about which not much is known and for understanding subjective information, for instance, the experiences of individuals. Case studies, participant observation, survey research and interviews are all methods of qualitative research.

TYPES OF QUALITATIVE METHODS

## A. Phenomenological Method

Describing how any one participant experiences a specific event is the goal of the phenomenological method of research. This method utilizes interviews, observation and surveys to gather information from subjects. Phenomenology is highly concerned with how participants feel about things during an event or activity. Businesses use this method to develop processes to help sales representatives effectively close sales using styles that fit their personality.

## B.Ethnographic Model

The ethnographic model is one of the most popular and widely recognized methods of qualitative research; it immerses subjects in a culture that is unfamiliar to them. The goal is to learn and describe the culture's characteristics much the same way anthropologists observe the cultural challenges and motivations that drive a group. This method often immerses the researcher as a subject for extended periods of time. In a business model, ethnography is central to understanding customers. Testing products personally or in beta groups before releasing them to the public is an example of ethnographic research.

## C. Grounded Theory Method

The grounded theory method tries to explain why a course of action evolved the way it did. Grounded theory looks at large subject numbers. Theoretical models are developed based on existing data in existing modes of genetic, biological or psychological science. Businesses use grounded theory when conducting user or satisfaction surveys that target why consumers use company products or services. This data helps companies maintain customer satisfaction and loyalty.

## D. Case Study Model

Unlike grounded theory, the case study model provides an in-depth look at one test subject. The subject can be a person or family, business or organization, or a town or city. Data is collected from various sources and compiled using the details to create a bigger conclusion. Businesses often use case studies when marketing to new clients to show how their business solutions solve a problem for the subject.

## E. Historical Model

The historical method of qualitative research describes past events in order to understand present patterns and anticipate future choices. This model answers questions based on a hypothetical idea and then uses resources to test the idea for any potential deviations. Businesses can use historical data of previous ad campaigns and the targeted demographic and split-test it with new campaigns to determine the most effective campaign.

## F. Narrative Model

The narrative model occurs over extended periods of time and compiles information as it happens. Like a story narrative, it takes subjects at a starting point and reviews situations as obstacles or opportunities occur, although the final narrative doesn't always remain in chronological order. Businesses use the narrative method to define buyer personas and use them to identify innovations that appeal to a target market.

1. Considerations

Although many studies use just one method of investigation, there are many ways to combine methods. For example, a mixed methods design is a way to combine qualitative and quantitative research methods to understand a phenomenon more thoroughly. These types of designs use both a traditional scientific methodology, such as running an experiment with more exploratory methods, such as a case study. Although these designs can be costly and burdensome to the researcher, they also can create a solid study by incorporating the strengths in both methods.