

Characteristics of Research

1. A systematic approach is followed in research. Rules and procedures are an integral part of research that set the objective of a research process. Researchers need to practice ethics and code of conduct while making observations or drawing conclusions.
2. Research is based on logical reasoning and involves both inductive and deductive methods.
3. The data or knowledge that is derived is in real time, actual observations in the natural settings.
4. There is an in-depth analysis of all the data collected from research so that there are no anomalies associated with it.
5. Research creates a path for generating new questions. More research opportunity can be generated from existing research.
6. Research is analytical in nature. It makes use of all the available data so that there is no ambiguity in inference.
7. Accuracy is one of the important character of research, the information that is obtained while conducting the research should be accurate and true to its nature. For example, research conducted in a controlled environment like a laboratory. Here accuracy is measured of instruments used, calibrations, and the final result of the experiment.

What are the types of Research?

Following are the types of research:

Basic Research: Basic research is mostly conducted to enhance knowledge. It covers fundamental aspects of research. The main motivation of this research is knowledge expansion. It is a non-commercial research and doesn't facilitate in creating or inventing anything. For example, an experiment is a good example of basic research.

Applied Research: Applied research focuses on analyzing and solving real-life problems. This type of research refers to the study that helps solve practical problems using scientific methods. This research plays an important role in solving issues that impact the overall well-being of humans. For example, finding a specific cure for a disease.

Problem Oriented Research: As the name suggests, problem-oriented research is conducted to understand the exact nature of the problem to find out relevant solutions. The term "problem" refers to having issues or two thoughts while making any decisions.

For e.g Revenue of a car company has decreased by 12% in the last year. The following could be the probable causes: There is no optimum production, poor quality of a product, no advertising, economic conditions etc.

Problem Solving Research: This type of research is conducted by companies to understand and resolve their own problems. The problem-solving research uses applied research to find solutions to the existing problems.

Qualitative Research: Qualitative research is a process that is about inquiry, that helps in-depth understanding of the problems or issues in their natural settings. This is a non- statistical research method.

Qualitative research is heavily dependent on the experience of the researchers and the questions used to probe the sample. The sample size is usually restricted to 6-10 people in a sample. Open-ended questions are asked in a manner that one question leads to another. The purpose of asking open-ended questions is to gather as much information as possible from the sample.

Following are the methods used for qualitative research:

1. One-to-one interview
2. Focus groups
3. Ethnographic Research
4. Content/ Text Analysis
5. Case study research

Quantitative Research: Qualitative research is a structured way of collecting data and analyzing it to draw conclusions. Unlike qualitative research, this research method uses a computational, statistical and similar method to collect and analyze data. Quantitative data is all about numbers.

Quantitative research involves a larger population as more number of people means more data. In this manner, more data can be analyzed to obtain accurate results. This type of research method uses close-ended questions because, in quantitative research, the researchers are typically looking at measuring the extent and gathering foolproof statistical data.

Online surveys, questionnaires, and polls are preferable data collection tools used in quantitative research. There are various methods of deploying surveys or questionnaires. In recent times online surveys and questionnaires have gained popularity. Survey respondents can receive these surveys on mobile phones, emails or can simply use the internet to access surveys or questionnaires.

What is the purpose of Research?

There are three purposes of research:

1. Exploratory Research: As the name suggests, exploratory research is conducted to explore the research questions and may or may not offer a final conclusion to the research conducted. It is conducted to handle new problem areas which haven't been explored before. Exploratory research lays the foundation for more conclusive research and data collection. For example, a research conducted to know the level of customer satisfaction among the patrons of a restaurant.

2. Descriptive Research: Descriptive research focuses on throwing more light on current issues through a process of data collection. Descriptive studies are used to describe the behavior of a sample population. In descriptive research, only one variable (anything that has quantity or quality that varies) is required to conduct a study. The three main purposes of descriptive research are describing, explaining and validating the findings. For example, a research conducted to know if top-level management leaders in the 21st century possess the moral right to receive a huge sum of money from the company profit?

3. Explanatory Research: Explanatory research or causal research, is conducted to understand the impact of certain changes in existing standard procedures. Conducting experiments is the most popular form of casual research. For example, research conducted to understand the effect of rebranding on customer loyalty.

To understand the characteristic of research design using research purpose here is a comparative analysis:

	Exploratory Research	Descriptive Research	Explanatory Research
Research approach used	Unstructured	Structured	Highly structured
Research conducted through	Asking research questions	Asking research questions	By using research hypotheses.
When is it conducted?	Early stages of decision making	Later stages of decision making	Later stages of decision making

Learn More: [Primary Research- Examples, Methods and Purpose](#)

Research method is defined as the tools or an instrument that is used to accomplish the goals and attributes of conducting a [research](#) process. Think of the methodology as a systematic process in which the tools or instruments will be employed. There is no use of a tool if it is not being used efficiently.

To understand research methods we must first understand what research is. Research is a careful study of a specific problem or concern using scientific methods, tools, and instruments. Remember as kids, we were given projects in elementary schools and we were asked to know about it in details. Research is the adult form of that elementary project, only a more precise and thorough version!

Research can be about anything, scientific research, basic research, applied research, [market research- qualitative market research](#) and [quantitative market research](#), problem-oriented research, problem-solving research. To begin researching something, you need to have a problem or a concern that needs a solution.

Research really begins with asking the right research questions, what follows next is choosing appropriate research method to be able to investigate the problem or issue in the right direction and then finally analyze your findings or observations to draw appropriate conclusions.

When it comes to customers and related research, there should be no stone unturned. Specify and plan the customer’s research, help make smart decisions about how to market and position your business efficiently. Choosing the right research method will help you get important answers about your clients. But before we go any further, first let us identify the research methods

Types of Research Methods and Research Example

Research methods are broadly classified as Qualitative Research and Quantitative Research.

Both research methods have distinctive properties and data collection methods. In this segment of the blog, we will learn more about both these research methods.

Qualitative Research Methods

Qualitative research is a research method that collects data using conversational methods, where participants involved in the research are asked open-ended questions. The responses collected are essentially non-numerical. This method not only helps a researcher understand “what” participant think but also, “why”they think in a particular way.

Here are the widely used qualitative research methods:

- **One-to-one Interview:** This interview technique is systematically planned and as the name suggests is conducted with one participant at a given point in time. One-to-one interviews need a researcher to prepare questions in advance and to make sure the researcher asks only the most important questions to the participant. This type of interview lasts anywhere between 20 minutes to half an hour. During this time the researcher collects as many meaningful data as possible from the participants to draw inferences.
- **Focus Groups:** Focus groups are small groups comprising of around 6-10 participants who are usually experts in the subject matter. A moderator is assigned to a focus group who facilitates the discussion amongst the group members. A moderator's experience in conducting focus group plays an important role. An experienced moderator can probe the participants by asking the correct research questions that will help him/her collect a sizable amount of information related to the research.
- **Ethnographic Research:** Ethnographic research is an in-depth form of research where people are observed in their natural environment with any alterations. This method can prove to be a bit demanding in terms of a researcher getting adapted to the natural environment of the target audience which could even be the Amazon rainforest! Geographic locations can be a constraint in this type of research method. Instead of conducting interviews a researcher needs to experience the settings in person to collect information.
- **Text Analysis:** Text analysis is a little different from other qualitative research methods as it is used to analyze the social life by decoding words, texts etc. through any available form of documentation. The researcher studies and understands the context in which the documents are furnished with the information and then tries to draw meaningful inferences from it. In modern times, researchers follow activities on a social media platform and try and understand the pattern of thoughts.
- **Case Study Research:** Case study research, as the name suggests is used to study an organization or an entity. This research method has evolved over the years and is one of the most valuable qualitative research methods known to researchers. This type of research is used in fields like education sector, philosophical and psychological studies. This method involves a deep diving into the ongoing research and collects data.

Quantitative Research Methods

Quantitative research methods are the methods that deal with numbers and anything that can be dealt with a measurable form, in a systematic way of investigating the phenomenon. It is used to answer questions in terms of justifying relationships with measurable variables to either explain, predict or control a phenomenon.

There are three methods that are often used by researchers to conduct this type of research, they are:

- **Survey Research-** The ultimate goal of survey research is to learn about a large population by deploying the survey. Gone are the days where a survey was carried out using a pen and a paper. Today, online surveys are a popular mode of research as they are convenient and can be sent in an email or made available on the internet. In this method, a researcher designs a survey with most relevant survey questions and deploys the survey. Once the researcher receives the responses he/she summarizes them to tabulate meaningful findings and data.
- **Descriptive Research-** Descriptive research is a quantitative research method, which corresponds to identifying the characteristics of an observed phenomenon and collecting more information. This research method is designed to depict the participants in a very

systematic and accurate manner. In simple words, descriptive research is all about describing the phenomenon, observing and drawing conclusions from it.

- Correlational Research- Correlational research examines the relationship between two or more variables. Let us take an example to understand correlational research. Let us take an example to understand correlational research, Consider hypothetically, a researcher is studying a correlation between cancer and married women. Let us say married women have a negative correlation with cancer. In this example, there are two variables: cancer, and married women. When we say negative correlation it means women who are married are less likely to develop cancer. However, it doesn't mean that marriage directly avoids cancer.

Identifying Research Methodology

To choose the appropriate research methods, it is necessary to clearly identify the research objectives. Here is an example of some of the research objectives you can take into consideration for your business:

- To start with, find out the needs of your clients
- Know their preferences and understand what is important to them
- Find an appropriate way to make your customers aware of your products and services.
- Find ways to improve your products or services to suit the needs of your customers.

After identifying what you need to know, you should then ask what research methods will offer you that information.

Organize your questions within the framework of the 7 Ps of marketing that influences your company – product, price, promotion, place, people, processes and physical tests.

A well-organized [customer research](#) process produces valid, accurate, reliable, timely and complete results. Research results that rigorously reflect the opinions and needs of your clients will help you grow your sales and improve your operations. To obtain the results you need to establish and follow the processes that you have detailed out for your organization:

Set your goals

Consider the client's research objectives and define those that identify with yours and plan a strategy once you obtain the information. Make sure that your [goals objectives smart](#) do not presume their result, and define them intelligently and make sure you set achievable targets, smart goals, and objectives.

Plan your research

Good planning allows the use of creative and logical approaches to select the research methods that gather the information. Your plan will be influenced by the type and complexity of the information you need, the skills of your market research team, and how soon you need the information and your budget. Make an adequate strategic planning for your [market research](#)

Identify your list of questions and decide on the research methods that will best achieve your goals. Detail your research approach and some initial idea of how you will classify and analyze the data.

Collect and collate your results

Make a list of how you are going to carry out the research process, the data you need to collect and collection methods. This will help you keep track of your research processes and make sense of

your findings. It will also allow you to verify that your research accurately reflects the opinions of your clients and your market. Create a record table with:

- The consumer research activity
- The necessary data
- The research method (s) for data collection
- The steps to follow for data analysis.

Remember, research is only valuable and useful when it is valid, accurate and reliable. Relying on imperfect research is dangerous; Incorrect results can lead to [customer churn](#) and a decrease in sales.

It is important to obtain information about how the collection of customer information was carried out, and to ensure that your data is:

- Valid – founded, logical, rigorous and impartial.
- Accurate – free of errors and including required details.
- Reliable – that can be reproduced by other people who investigate in the same way.
- Timely – current and collected within an appropriate time frame.
- Complete – includes all the data you need to support your business decisions.

Analyze and understand your research

The analysis of the data can vary from simple and direct steps to technical and complex processes. Adopt an approach, and choose the method of [data analysis](#) based on the research methods you have carried out.

Keep the findings ready

Choose a spreadsheet that allows you to easily enter your data. If you do not have a large amount of data, you should be able to manage them with the use of basic tools available in the software. If you have collected more complete and complex data, you may have to consider using specific programs or tools that will help you manage your data.

Review and interpret the information to draw conclusions

Once you have gathered all the data, you can scan your information and interpret it to draw conclusions and make informed decisions. You should review the data and then:

- Identify the main [trends](#) and issues, opportunities and problems you observe, and write a sentence about each one
- Keep track of the frequency with which each of the main findings appears
- Make a list of your findings from the most common to the least common
- Evaluate and perform separately a list of the strengths, weaknesses, opportunities, and threats that have been identified in a [SWOT analysis](#).
- Preparation of conclusions and recommendations about your research

Review your goals before making any conclusions about your research. Keep in mind if the process you have completed and the data you have gathered help answer your questions. Ask yourself if what your research revealed facilitates the identification of your conclusions and recommendations. Review your conclusions and, based on what you know now:

Choose some strategies that will help you improve your business

- Act on your strategies
- Look for gaps in the information, and consider doing additional research if necessary
- Plan to review the results of the research, and consider efficient strategies.

So what is the difference between Qualitative Research and Quantitative Research?

Qualitative Research

Qualitative Research is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem. Qualitative data collection methods vary using unstructured or semi-structured techniques. Some common methods include focus groups (group discussions), individual interviews, and participation/observations. The sample size is typically small, and respondents are selected to fulfil a given quota.

Quantitative Research

Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics. It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population. Quantitative Research uses measurable data to formulate facts and uncover patterns in research. Quantitative data collection methods are much more structured than Qualitative data collection methods. Quantitative data collection methods include various forms of surveys – online surveys, paper surveys, mobile surveys and kiosk surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations.

Qualitative Research: Definition

Qualitative research is defined as a market research method that focuses on obtaining data through open-ended and conversational communication.

This method is not only about “what” people think but also “why” they think so. For example, consider a convenience store looking to improve its patronage. A systematic observation concludes that the number of men visiting this store are more. One good method to determine why women were not visiting the store is to conduct an in-depth interview of potential customers in the category.

On successfully interviewing female customers, visiting the nearby stores and malls, and selecting them through random sampling, it was known that the store doesn't have enough items for women and so there were fewer women visiting the store, which was understood only by personally interacting with them and understanding why they didn't visit the store, because there were more male products than female ones.

Therefore, the qualitative research methods allow for in-depth and further probing and questioning of respondents based on their responses, where the interviewer/researcher also tries to understand their motivation and feelings.

Qualitative Research Methods with Examples

Qualitative research methods are designed in a manner that they help reveal the behavior and perception of a target audience with reference to a particular topic. There are different types of qualitative research methods like an in-depth interview, focus groups, ethnographic research, content analysis, case study research that are usually used.

The results of qualitative methods are more descriptive and the inferences can be drawn quite easily from the data that is obtained.

Qualitative research methods originated in the social and behavioral sciences. Today our world is more complicated and it is difficult to understand what people think and perceive. Qualitative research methods make it easier to understand that as it is more communicative and descriptive.

The following are the qualitative research methods that are frequently used:

1. One-on-One Interview: Conducting in-depth interviews is one of the most common qualitative research methods. It is a personal interview that is carried out with one respondent at a time. This is purely a conversational method and invites opportunities to get details in depth from the respondent.

One of the advantages of this method provides a great opportunity to gather precise data about what people believe and what their motivations are. If the researcher is well experienced asking the right questions can help him/her collect meaningful data. If they should need more information the researchers should ask such follow up questions that will help them collect more information.

These interviews can be performed face-to-face or on phone and usually can last between half an hour to two hours or even more. When the in-depth interview is conducted face to face it gives a better opportunity to read the body language of the respondents and match the responses.

2. Focus groups: A focus group is also one of the commonly used qualitative research methods, used in data collection. A focus group usually includes a limited number of respondents (6-10) from within your target market.

The main aim of the focus group is to find answers to the why what and how questions. One advantage of focus groups is, you don't necessarily need to interact with the group in person. Nowadays focus groups can be sent an online survey on various devices and responses can be collected at the click of a button.

Focus groups are an expensive method as compared to the other qualitative research methods. Typically they are used to explain complex processes. This method is very useful when it comes to market research on new products and testing new concepts.

3. Ethnographic research: Ethnographic research is the most in-depth observational method that studies people in their naturally occurring environment.

This method requires the researchers to adapt to the target audiences' environments which could be anywhere from an organization to a city or any remote location. Here geographical constraints can be an issue while collecting data.

This research design aims to understand the cultures, challenges, motivations, and settings that occur. Instead of relying on interviews and discussions, you experience the natural settings first hand.

This type of research method can last from a few days to a few years, as it involves in-depth observation and collecting data on those grounds. It's a challenging and a time-consuming method and solely depends on the expertise of the researcher to be able to analyze, observe and infer the data.

4. Case study research: The case study method has evolved over the past few years and developed as into a valuable qualitative research method. As the name suggests it is used for explaining an organization or an entity.

This type of research method is used within a number of areas like education, social sciences and similar. This method may look difficult to operate, however, it is one of the simplest ways of conducting research as it involves a deep dive and thorough understanding of the data collection methods and inferring the data.

5. Record keeping: This method makes use of the already existing reliable documents and similar sources of information as the data source. This data can be used in a new research. This is similar to going to a library. There one can go over books and other reference material to collect relevant data that can likely be used in the research.

6. Process of observation: Qualitative Observation is a process of research that uses subjective methodologies to gather systematic information or data. Since, the focus on qualitative observation is the research process of using subjective methodologies to gather information or data. The qualitative observation is primarily used to equate quality differences.

Qualitative observation deals with the 5 major sensory organs and their functioning – sight, smell, touch, taste, and hearing. This doesn't involve measurements or numbers but instead characteristics.

Qualitative Research: Data Collection and Analysis

A. Qualitative Data Collection

Qualitative data collection allows collecting data that is non-numeric and helps us to explore how decisions are made and provide us with detailed insight. For reaching such conclusions the data that is collected should be holistic, rich and nuanced and findings to emerge through careful analysis.

1. Whatever method a researcher chooses for collecting qualitative data, one aspect is very clear the process will generate a large amount of data. In addition to the variety of methods available, there are also different methods of collecting and recording the data.

For example, if the qualitative data is collected through focus group or one-to-one discussion, there will be handwritten notes or video recorded tapes. If there are recordings they should be transcribed and before the process of data analysis can begin.

2. As a rough guide, it can take a seasoned researcher 8-10 hours to transcribe the recordings of an interview, which can generate roughly 20-30 pages of dialogues. Many researchers also like to maintain separate folders to maintain the recording collected from the different focus group. This helps them compartmentalize the data collected.

3. In case there are running notes taken, which are also known as field notes, they are helpful in maintaining comments, environmental contexts, nonverbal cues etc. These filed notes are helpful and can be compared while transcribing audio recorded data. Such notes are usually informal but should be secured in a similar manner as the video recordings or the audio tapes.

B. Qualitative Data Analysis

Qualitative data analysis such as notes, videos, audio recordings images, and text documents. One of the most used methods for qualitative data analysis is text analysis.

Text analysis is a data analysis method that is distinctly different from all other qualitative research methods, where researchers analyze the social life of the participants in the research study and decode the words, actions etc.

There are images also that are used in this research study and the researchers analyze the context in which the images are used and draw inferences from them. In the last decade, text analysis through what is shared on social media platform has gained supreme popularity.

Characteristics of Qualitative Research Methods

1. Qualitative research methods usually collect data at the sight, where the participants are experiencing issues or problems. These are real-time data and rarely bring the participants out of the geographic locations to collect information.
2. Qualitative researchers typically gather multiple forms of data, such as interviews, observations, and documents, rather than rely on a single data source.
3. This type of research method works towards solving complex issues by breaking down into meaningful inferences, that is easily readable and understood by all.
4. Since its a more communicative method, people can build their trust on the researcher and the information thus obtained is raw and unadulterated.

Qualitative Research Method Case Study Example

Let's take the example of a bookstore owner who is looking for ways to improve their sales and customer outreach. An [online community](#) of members who were the loyal patrons of the bookstore were interviewed and related questions were asked and the questions were answered by them.

At the end of the interview, it was realized that most of the books in the stores were suitable for adults and there were not enough options for children or teenagers.

By conducting this qualitative research the bookstore owner realized what the shortcomings were and what were the feelings of the readers. Through this research now the bookstore owner can now keep books for different age categories and can improve his sales and customer outreach.

Such qualitative research method example can serve as the basis to indulge in further [quantitative research](#), which provides remedies.

Qualitative Research Methods Vs Quantitative Research Methods

The basic differences of [qualitative research](#) methods and [quantitative research](#) methods are simple are straightforward. They differ in:

- Their analytical objectives
- Types of questions asked
- Types of data collection instruments
- Forms of data they produce

- Degree of flexibility

Learn More: [Difference between Quantitative Research and Qualitative Research](#)

Attributes	Qualitative Research Methods	Quantitative Research Methods
Analytical objectives	This research method focuses on to describe individual experiences and beliefs.	Quantitative research method focuses on describing the characteristics of a population.
Types of questions asked	Open ended questions	Closed ended questions
Data collection Instrument	Use semi-structured methods such as in-depth interviews, focus groups, and participant observation	Use highly structured methods such as structured observation using questionnaires and surveys
Form of data produced	Descriptive data	Numerical data
Degree of flexibility	Participant responses affect how and which questions researchers ask next	Participant responses do not influence or determine how and which questions researchers ask next

10 Steps to Write a Basic Research Paper

Basic Research Paper is a form of educational writing, formulated by students in colleges and universities. It usually comprises of about five to fifteen pages. It is a document submitted in support of a application for a degree or professional qualification. It is also known as Term Paper. A research paper involves students to place information regarding a topic and provides support with an evidence for that position in an organized report. This type of paper is generally meant to describe an event, a concept or argue a point. Following are 10 steps to write a legible basic research paper.

- 1) Choose the Right Research Topic:** Neither the research topic should be too long nor too short. It should be specific. You should able to get ample information on it to present your research paper. So start by choosing a topic in which you are really interested in.
- 2) Gather Information:** Information can be gathered from variety of sources. You can use Books, Magazines, Encyclopedias, Internet etc. and can conduct interviews, surveys also.
- 3) Start Your Research:** Jot down your main points. Look out for recent and reliable information. Recollect all of your thoughts and start writing a research paper.
- 4) Make a Outline of the Research :** Put your all relevant thoughts in a logical order i.e organize your research paper in an appropriate manner starting from the stating of the topic, including thesis and conclusion at the end.
- 5) Make a Body of Your Research paper:** Once you have an outline of the research you will able to link your views and evidences with the help of sentences, paragraphs, visuals, sounds or a combination of any of these. Put all your points in the order they will appear in the project. If you find that there is not enough information while writing your research paper you can always collect more relevant information.

6) Revise Your Paper: Check for grammar mistakes, spelling problems. Make sure that your ideas explained clearly.

7) Make a Final Draft: It should include all: introduction, supporting evidences with a logical conclusion.

8) Prepare a Bibliography: List all the sources from which you collected information for the paper.

9) Create a Title Page & Table of Contents: Title page should include some standard information like your name, topic of the research, your Mentor's name. Table of contents should include topics, sub topics and the page no.s should be stated on which each is explained in your research paper.

10) Evaluate your Work: Make sure that you have completed all parts with overall neatness and put them into correct order without missing anything. Any borrowed material is properly acknowledged. Finally submit your paper on time.

Kindly post your comments, opinion below this blog.

Wishing you all, success!!!

Definition of Qualitative Data

Qualitative Data refers to the data that provides insights and understanding about a particular problem. It can be approximated but cannot be computed. Hence, the researcher should possess complete knowledge about the type of characteristic, prior to the collection of data.

The nature of data is descriptive and so it is a bit difficult to analyze it. This type of data can be classified into categories, on the basis of physical attributes and properties of the object. The data is interpreted as spoken or written narratives rather than numbers. It is concerned with the data that is observable in terms of smell, appearance, taste, feel, texture, gender, nationality and so on. The methods of collecting qualitative data are:

- Focus Group
- Observation
- Interviews
- Archival Materials like newspapers.

Definition of Quantitative Data

Quantitative Data, as the name suggests is one which deals with quantity or numbers. It refers to the data which computes the values and counts and can be expressed in numerical terms is called quantitative data. In statistics, most of the analysis are conducted using this data.

Quantitative data may be used in computation and statistical test. It is concerned with measurements like height, weight, volume, length, size, humidity, speed, age etc. The tabular and diagrammatic presentation of data is also possible, in the form of charts, graphs, tables, etc. Further, the quantitative data can be classified as discrete or continuous data. the methods used for the collection of data are:

- Surveys
- Experiments
- Observations and Interviews

Key Differences Between Qualitative and Quantitative Data

The fundamental points of difference between qualitative and quantitative data are discussed below:

1. The data type, in which the classification of objects is based on attributes (quality) is called qualitative data. The type of data which can be counted and expressed in numbers and values is called quantitative data.
2. The research methodology is exploratory in qualitative data, i.e. to provide insights and understanding. On the other hand, quantitative data is conclusive in nature which aims at testing a specific hypothesis and examine the relationships.
3. The approach to inquiry in the case of qualitative data is subjective and holistic whereas quantitative data has an objective and focused approach.
4. When the data type is qualitative the analysis is non-statistical. As opposed to quantitative data which uses statistical analysis.
5. In qualitative data, there is an unstructured gathering of data. As against this, data collection is structured in quantitative data.
6. While qualitative data determines the depth of understanding, quantitative data ascertains the level of occurrence.
7. Quantitative data is all about 'How much or how many'. On the contrary, qualitative data asks 'Why?'
8. In qualitative data the sample size is small and that too is drawn from non-representative samples. Conversely, the sample size is large in quantitative data drawn from the representative sample.
9. Qualitative data develops initial understanding, i.e. it defines the problem. Unlike quantitative data, which recommends the final course of action.

Conclusion

So, for the collection and measurement of data, any of the two methods discussed above can be used. Although both have its merits and demerits, i.e. while qualitative data lacks reliability, quantitative data lacks description. Both are used in conjunction so that the data gathered is free from any errors. Further, both can be acquired from the same data unit only their variables of interest are different, i.e. numerical in case of quantitative data and categorical in qualitative data.

Comparison Chart

Basis for Comparison	Qualitative Data	Quantitative Data
Meaning	Qualitative data is the data in which the classification of objects is based on attributes and properties.	Quantitative Data is the type of data which can be measured and expressed numerically.
Research Methodology	Exploratory	Conclusive
Approach	Subjective	Objective
Analysis	Non-Statistical	Statistical
Collection of data	Unstructured	Structured
Determines	Depth of understanding	Level of occurrence

Basis for Comparison	Qualitative Data	Quantitative Data
Asks	Why?	How many or How much?
Sample	Small number of non-representative samples	Large number of representative samples
Outcome	Develops initial understanding.	Recommends final course of action.

Ethics in Research and Scholarly Activity, Including Protection of Research Participants

Introduction

This Issues in Ethics statement provides guidance to ASHA members so that they may engage in ethically appropriate research and scholarship activities. The breadth of research and scholarship within the Association and within members' activities has necessitated change in the Code, such that research and scholarship are integrated throughout. This breadth includes research both within and across disciplines.

Research and scholarly activities constitute a professional focus for many, although clinical practice is the primary professional activity of a great majority of Association members. In addition, practicing clinicians often participate in research to increase the evidence base for clinical services they provide. Further, all ASHA members and certificate holders are encouraged to critically evaluate research as it applies to their professional activities. Research and scholarship embrace all participants, both human and animal, and all settings in which the continuum of these activities (e.g., data gathering, analysis, reporting, etc.) occur, including but not limited to

- universities;
- laboratories;
- medical centers and other treatment facilities;
- private practice; and
- public and private schools.

It is therefore fitting that the Association's Code provides guidance when members and certificate holders engage in or use research and other scholarly work. The Code approaches research and scholarship through the themes of (a) ethical treatment of research participants (human and animal); (b) compliance; (c) honesty; and (d) supervision of research staff, practitioner collaborators, and students.

Guidance on Ethical Treatment of Research Participants (Human and Animal)

The ethical treatment of research participants (human and animal) requires informed consent for human participants, humane treatment of animals, nondiscriminatory practices, and confidentiality.

Informed Consent

Informed consent constitutes consent by persons served, research participants engaged, or parents and/or guardians of persons served to a proposed course of action after the communication of adequate information regarding expected outcomes and potential risks. Failure to obtain written consent from individuals participating in research, or from the parents/guardians of individuals participating in research, represents an ethical violation of the following Principles and Rules:

- *Principle of Ethics I, Rule H:* Individuals shall obtain informed consent from the persons they serve about the nature and possible risks and effects of services provided, technology employed, and products dispensed. This obligation also includes informing persons served about possible effects of not engaging in treatment or not following clinical recommendations. If diminished decision-making ability of persons served is suspected, individuals should seek appropriate authorization for services, such as authorization from a spouse, other family member, or legally authorized/appointed representative.
- *Principle of Ethics I, Rule I:* Individuals shall enroll and include persons as participants in research or teaching demonstrations only if participation is voluntary, without coercion, and with informed consent.
- *Principle of Ethics I, Rule J:* Individuals shall accurately represent the intended purpose of a service, product, or research endeavor and shall abide by established guidelines for clinical practice and the responsible conduct of research.

Discrimination

A foundational principle of research is the inclusion of the varied demographics of the population under study. An additional foundational principle is the fundamental respect for individual differences by those who design, execute, and report research. Discrimination in the selection and treatment of human participants may be the result of explicit or implicit bias. One example would be excluding a specific group (e.g., individuals who identify as bisexual) because of personal bias when that variable (sexual orientation) would not influence the research study's outcome(s). Doing this violates *Principle of Ethics I, Rule C*, which states, "Individuals shall not discriminate in the delivery of professional services or in the conduct of research and scholarly activities on the basis of race, ethnicity, sex, gender identity/gender expression, sexual orientation, age, religion, national origin, disability, culture, language, or dialect."

Confidentiality

Sharing information that can be used to identify a research participant is a violation of the *Code*. Even disclosing minimal information (e.g., initials of participant's name, disorder, address of participant, aspects of treatment) through any form of communication, including social media, may allow others to identify the participant and may be a violation of the following Principles and Rules:

- *Principle of Ethics I, Rule O:* Individuals shall protect the confidentiality and security of records of professional services provided, research and scholarly activities conducted, and products dispensed. Access to these records shall be allowed only when doing so is necessary to protect the welfare of the person or of the community, is legally authorized, or is otherwise required by law.
- *Principle of Ethics I, Rule P:* Individuals shall protect the confidentiality of any professional or personal information about persons served professionally or participants involved in

research and scholarly activities and may disclose confidential information only when doing so is necessary to protect the welfare of the person or of the community, is legally authorized, or is otherwise required by law.

Compliance

Regardless of the research setting (e.g., university, school, industry, private practice), each project involving human or animal participants must undergo an initial review to ensure compliance with applicable local, institutional, state, and federal regulations. Failure to conduct research without this review violates the following Principles and Rules:

- *Principle of Ethics I, Rule J*: "Individuals shall accurately represent the intended purpose of a service, product, or research endeavor and shall abide by established guidelines for clinical practice and the responsible conduct of research."
- *Principle of Ethics II, Rule C*: "Individuals who engage in research shall comply with all institutional, state, and federal regulations that address any aspects of research, including those that involve human participants and animals."
- *Principle of Ethics IV, Rule R*: "Individuals shall comply with local, state, and federal laws and regulations applicable to professional practice, research ethics, and the responsible conduct of research."

In order to ensure that research results are accurate, safe, and reliable, research must be conducted using commonly accepted principles regarding equipment maintenance and calibration. Failure to conduct research in such a manner violates *Principle of Ethics II, Rule H*, which states, "Individuals shall ensure that all technology and instrumentation used to provide services or to conduct research and scholarly activities are in proper working order and are properly calibrated."

Individuals who are aware that those conducting research, either in their professional area or other professional areas, are in violation of the Association's *Code* or standards of care appropriate for other professions have a responsibility to report those activities or they will be in violation of the following Principles and Rules:

- *Principle of Ethics IV Rule M*: "Individuals with evidence that the Code of Ethics may have been violated have the responsibility to work collaboratively to resolve the situation where possible or to inform the Board of Ethics through its established procedures."
- *Principle of Ethics IV, Rule N*: "Individuals shall report members of other professions who they know have violated standards of care to the appropriate professional licensing authority or board, other professional regulatory body, or professional association when such violation compromises the welfare of persons served and/or research participants."

Individuals conducting research or other scholarly activities are expected to do so within their areas of competence. Failure to adhere will be a violation of *Principle of Ethics I, Rule A*, which states, "Individuals shall provide all clinical services and scientific activities competently."

[Conflicts of interest](#) in research and scholarly activity can involve personal or commercial interests, or financial arrangements. If a researcher is offered, or receives, gifts or incentives—even something as minor as a free lunch—there may be a conflict of interest that may violate *Principle of Ethics III, Rule B*, which states, "Individuals shall avoid engaging in conflicts of interest whereby personal, financial, or other considerations have the potential to influence or compromise

professional judgment and objectivity." Consideration of the de minimis nature of a gift also is relevant, however.

Honesty

Honesty refers to being accurate and truthful about one's self, one's work, and the work of others. For example, while conducting research and scholarly activity, misrepresenting a Clinical Fellow or a student as either a [practicing audiologist or speech-language pathologist](#) would violate the following Principles and Rules:

- *Principle of Ethics I, Rule D:* "Individuals shall not misrepresent the credentials of aides, assistants, technicians, support personnel, students, research interns, Clinical Fellows, or any others under their supervision, and they shall inform those they serve professionally of the name, role, and professional credentials of persons providing services."
- *Principle of Ethics III, Rule A:* "Individuals shall not misrepresent their credentials, competence, education, training, experience, and scholarly contributions."

Research Misconduct

The [Office of Research Integrity \(ORI\)](#) of the U.S. Department of Health & Human Services defines **research misconduct** as "fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results," and further states that "research misconduct does not include honest error or differences of opinion."

ORI defines **fabrication** as "making up data or results and recording or reporting them." Examples of fabricating research data or results and recording or reporting them include creating spreadsheets that contain demographic information and performance results for research participants who do not exist, and creating figures for public presentation that contain results of physical measures of sound outputs for auditory devices that cannot produce these levels. These examples may be a violation of the following Principles and Rules:

- *Principle of Ethics I, Rule Q:* "Individuals shall maintain timely records and accurately record and bill for services provided and products dispensed and shall not misrepresent services provided, products dispensed, or research and scholarly activities conducted."
- *Principle of Ethics III, Rule C:* "Individuals shall not misrepresent research and scholarly activities, diagnostic information, services provided, results of services provided, products dispensed, or the effects of products dispensed."

ORI defines **falsification** as "manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record." Examples of falsifying research data and/or reporting such data include (a) reporting data that were not collected, (b) altering data collected to achieve a particular outcome, (c) reporting only data that support your hypotheses and/or interests, and (d) making false claims in promotional materials about what one's research has demonstrated or supported. These examples may be a violation of the following Principles and Rules:

- *Principle of Ethics III, Rule C:* "Individuals shall not misrepresent research and scholarly activities, diagnostic information, services provided, results of services provided, products dispensed, or the effects of products dispensed."

- *Principle of Ethics III, Rule D*: "Individuals shall not defraud through intent, ignorance, or negligence or engage in any scheme to defraud in connection with obtaining payment, reimbursement, or grants and contracts for services provided, research conducted, or products dispensed."
- *Principle of Ethics III, Rule E*: "Individuals' statements to the public shall provide accurate and complete information about the nature and management of communication disorders, about the professions, about professional services, about products for sale, and about research and scholarly activities."
- *Principle of Ethics III, Rule F*: "Individuals' statements to the public shall adhere to prevailing professional norms and shall not contain misrepresentations when advertising, announcing, and promoting their professional services and products and when reporting research results."

ORI defines **plagiarism** as "the appropriation of another person's ideas, processes, results, or words without giving appropriate credit." Representing any part or parts of another's work as one's own is considered plagiarism and may be a violation of *Principle of Ethics III, Rule A* (see above) and *Principle of Ethics IV, Rule K*, which states, "Individuals shall reference the source when using other persons' ideas, research, presentations, results, or products in written, oral, or any other media presentation or summary. To do otherwise constitutes plagiarism."

Failing to recognize students or any other contributors as authors of research or scholarly work, or assigning authorship credit to an individual who has not contributed to research or scholarly work, may result in violation of *Principle of Ethics III, Rule A* (see above) and *Principle of Ethics IV, Rule J*, which states, "Individuals shall assign credit only to those who have contributed to a publication, presentation, process, or product. Credit shall be assigned in proportion to the contribution and only with the contributor's consent."

Using direct quotes or paraphrasing published research to suggest that the author(s) of the research endorsed a product, treatment, or product may violate the following Principles and Rules:

- *Principle of Ethics III, Rule E*: "Individuals' statements to the public shall provide accurate and complete information about the nature and management of communication disorders, about the professions, about professional services, about products for sale, and about research and scholarly activities."
- *Principle of Ethics III, Rule F*: "Individuals' statements to the public shall adhere to prevailing professional norms and shall not contain misrepresentations when advertising, announcing, and promoting their professional services and products and when reporting research results."

Supervision of Research Staff, Practitioner Collaborators, and Students

Supervision of research staff, collaborators, and students is an integral part of scholarly activity and research. All individuals involved in research must be held to the highest levels of ethical conduct. Supervisors must ensure that all individuals involved in the research project receive appropriate training and are competent to conduct assigned research activities. The research supervisor shall maintain professional supervisor–supervisee relationships and assign credit appropriately.

Failure of individuals in supervisory or administrative roles to delegate research responsibilities appropriately to students or staff may result in violation of the following Principles and Rules:

- *Principle of Ethics II, Rule E:* "Individuals in administrative or supervisory roles shall not require or permit their professional staff to provide services or conduct research activities that exceed the staff member's certification status, competence, education, training, and experience."
- *Principle of Ethics IV, Rule I:* "Individuals shall not knowingly allow anyone under their supervision to engage in any practice that violates the Code of Ethics."

Failure of individuals in supervisory or administrative roles to maintain appropriate relationships with all those involved in the research process may result in a violation of the following Principles and Rules:

- *Principle of Ethics IV, Rule G:* "Individuals shall not engage in any form of harassment, power abuse, or sexual harassment."
- *Principle of Ethics IV, Rule H:* "Individuals shall not engage in sexual activities with individuals (other than a spouse or other individual with whom a prior consensual relationship exists) over whom they exercise professional authority or power, including persons receiving services, assistants, students, or research participants."

Conclusion

ASHA members and certificate holders conduct research, scholarly activities, and protect human and animal participants in a variety of settings with multiple disciplines. For some individuals, these are considered primary activities; for others, these activities are completed in conjunction with other professional activities, including clinical practice. The above scenarios are only a few examples of ethical challenges. Many other challenges may arise, and individuals must remain alert and should consult the Code for guidance on appropriate courses of action.