

BUSINESS RESEARCH METHODS

UNIT 2

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RESEARCH PROCESS

Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps. The chart indicates that the research process consists of a number of closely related activities.



Step – 1: Identifying the Problem

The first and foremost task in the entire process of scientific research is to identify a research problem. A well-identified problem will lead the researcher to accomplish all-important phases of the research process, starting from setting objectives to the selection of the research methodology.

Step – 2: Reviewing of Literature

A review of relevant literature is an integral part of the research process. It enables the researcher to formulate his problem in terms of the specific aspects of the general area of his interest that has not been so far researched. Such a review, not only provides him exposure to a larger body of knowledge but also equips him with enhanced knowledge to efficiently follow

the research process. Through a proper review of the literature, the researcher may develop the coherence between the results of his study and those of the others.

Step – 3: Setting research questions, objectives, and hypotheses

After discovering and defining the research problem, researchers should make a formal statement of the problem leading to research objectives. An objective will precisely say what should be researched, to delineate the type of information that should be collected, and provide a framework for the scope of the study. The best expression of a research objective is a well-formulated, testable research hypothesis. A hypothesis is an unproven statement or proposition that can be refuted or supported by empirical data. Hypothetical statements assert a possible answer to a research question.

Step -4: Choosing the study design

The research design is the blueprint or framework for fulfilling objectives and answering research questions. It is a master plan specifying the methods and procedures for collecting, processing, and analyzing the collected data. There are four basic research designs that a researcher can use to conduct his or her study;

Step – 5: Deciding on the sample design

Sampling is an important and separate step in the research process. The basic idea of sampling is that it involves any procedure that uses a relatively small number of items or portions (called a sample) of a universe (called population) to conclude the whole population. It contrasts with the process of complete enumeration, in which every member of the population is included.

Such a complete enumeration is referred to as census. A population is the total collection of elements about which we wish to make some inference or generalization. A sample is a part of the population, carefully selected to represent that population.

Step – 6: Collecting data

The gathering of data may range from simple observation to a large-scale survey in any defined population. There are many ways to collect data. The approach selected depends on the objectives of the study, the research design, and the availability of time, money, and personnel. With the variation in the type of data (qualitative or quantitative) to be collected, the method of data collection also varies.

Step-7: Processing and Analyzing Data

Data processing generally begins with the editing and coding of data. Data are edited to ensure consistency across respondents and to locate omissions, if any. In survey data, editing reduces errors in the recording, improves legibility, and clarifies unclear and inappropriate responses. In addition to editing, the data also need coding. Because it is impractical to place raw data into

a report, alphanumeric codes are used to reduce the responses to a more manageable form for storage and future processing.

Step-8: Writing the report – Developing Research Proposal, Writing Report, Disseminating and Utilizing Results

The entire task of a research study is accumulated in a document called a proposal. A research proposal is a work plan, prospectus, outline, and an offer, a statement of intent or commitment from an individual researcher or an organization to produce a product or render a service to a potential client or sponsor. The proposal will be prepared to keep in view the sequence presented in the research process. The proposal tells us what, how, where, and to whom it will be done. It must also show the benefit of doing it. It always includes an explanation of the purpose of the study (the research objectives) or a definition of the problem. It systematically outlines the particular research methodology and details the procedures that will be utilized at each stage of the research process. The end goal of a scientific study is to interpret the results and draw conclusions.

SOURCES OF DATA

The sources of data can be classified into two types: statistical and non-statistical. Statistical sources refer to data that is gathered for some official purposes, incorporate censuses, and officially administered surveys. Non-statistical sources refer to the collection of data for other administrative purposes or for the private sector.

Different sources of data

The following are the two sources of data:

- **Internal sources:** When data is collected from reports and records of the organisation itself, they are known as the internal sources. For example, a company publishes its annual report' on profit and loss, total sales, loans, wages, etc.
- **External sources:** When data is collected from sources outside the organisation, they are known as the external sources. For example, if a tour and travel company obtains information on Karnataka tourism from Karnataka Transport Corporation, it would be known as an external source of data.

Types of Data

A) Primary data

- Primary data means first-hand information collected by an investigator.

- It is collected for the first time.
- It is original and more reliable.
- For example, the population census conducted by the government of India after every ten years is primary data.

B) Secondary data

- Secondary data refers to second-hand information.
- It is not originally collected and rather obtained from already published or unpublished sources.
- For example, the address of a person taken from the telephone directory or the phone number of a company taken from Just Dial are secondary data.

PRIMARY DATA COLLECTION METHODS

Primary data or raw data is a type of information that is obtained directly from the first-hand source through experiments, surveys or observations.

Observation Method

Observation method is used when the study relates to behavioural science. This method is planned systematically. It is subject to many controls and checks. The different types of observations are:

- Structured and unstructured observation
- Controlled and uncontrolled observation
- Participant, non-participant and disguised observation

Interview Method

The method of collecting data in terms of verbal responses. It is achieved in two ways, such as

- Personal Interview – In this method, a person known as an interviewer is required to ask questions face to face to the other person. The personal interview can be structured or unstructured, direct investigation, focused conversation, etc.
- Telephonic Interview – In this method, an interviewer obtains information by contacting people on the telephone to ask the questions or views, verbally.

Questionnaire Method

In this method, the set of questions are mailed to the respondent. They should read, reply and subsequently return the questionnaire. The questions are printed in the definite order on the form. A good survey should have the following features:

- Short and simple

- Should follow a logical sequence
- Provide adequate space for answers
- Avoid technical terms
- Should have good physical appearance such as colour, quality of the paper to attract the attention of the respondent

Schedules

This method is similar to the questionnaire method with a slight difference. The enumerations are specially appointed for the purpose of filling the schedules. It explains the aims and objects of the investigation and may remove misunderstandings, if any have come up. Enumerators should be trained to perform their job with hard work and patience.

SECONDARY DATA COLLECTION METHODS

Secondary data is data collected by someone other than the actual user. It means that the information is already available, and someone analyses it. The secondary data includes magazines, newspapers, books, journals, etc. It may be either published data or unpublished data.

Published data are available in various resources including

- Government publications
- Public records
- Historical and statistical documents
- Business documents
- Technical and trade journals
- Unpublished data includes
- Diaries
- Letters
- Unpublished biographies, etc.

QUESTIONNAIRE

A questionnaire is a research instrument that consists of a set of questions or other types of prompts that aims to collect information from a respondent. A research questionnaire is typically a mix of close-ended questions and open-ended questions.

Characteristics of a good questionnaire

- **Uniformity:** Questionnaires are very useful to collect demographic information, personal opinions, facts, or attitudes from respondents. One of the most significant attributes of a research form is uniform design and standardization. Every respondent sees the same questions. This helps in data collection and statistical analysis of this data. For example, the retail store evaluation questionnaire template contains questions for evaluating retail store experiences. Questions relate to purchase value, range of options for product selections, and quality of merchandise. These questions are uniform for all customers.
- **Exploratory:** It should be exploratory to collect qualitative data. There is no restriction on questions that can be in your questionnaire. For example, you use a data collection questionnaire and send it to the female of the household to understand her spending and saving habits relative to the household income. Open-ended questions give you more insight and allow the respondents to explain their practices. A very structured question list could limit the data collection.
- **Question Sequence:** It typically follows a structured flow of questions to increase the number of responses. This sequence of questions is screening questions, warm-up questions, transition questions, skip questions, challenging questions, and classification questions. For example, our motivation and buying experience questionnaire template covers initial demographic questions and then asks for time spent in sections of the store and the rationale behind purchases.

TYPES OF QUESTIONNAIRE

- **Structured Questionnaires:** Structured questionnaires collect quantitative data. The questionnaire is planned and designed to gather precise information. It also initiates a formal inquiry, supplements data, checks previously accumulated data, and helps validate any prior hypothesis.
- **Unstructured Questionnaires:** Unstructured questionnaires collect qualitative data. They use a basic structure and some branching questions but nothing that limits the responses of a respondent. The questions are more open-ended to collect specific data from participants.

Types of questions in a questionnaire

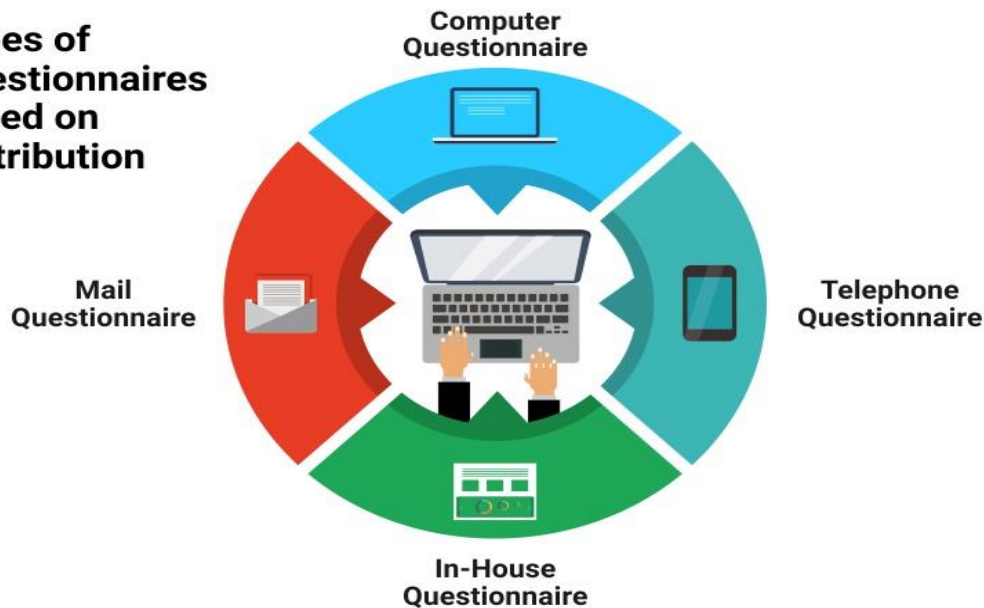
Can use multiple question types in a questionnaire. Using various question types can help increase responses to your research questionnaire as they tend to keep participants more engaged. The best customer satisfaction survey templates are the most commonly used for better insights and decision-making.

Some of the widely used types of questions are:

- **Open-Ended Questions:** Open-ended questions help collect qualitative data in a questionnaire where the respondent can answer in a free form with little to no restrictions.
- **Dichotomous Questions:** The dichotomous question is generally a “yes/no” close-ended question. This question is usually used in case of the need for necessary validation. It is the most natural form of a questionnaire.
- **Multiple-Choice Questions:** Multiple-choice questions are a close-ended question type in which a respondent has to select one (single-select multiple-choice question) or many (multi-select multiple choice question) responses from a given list of options. The multiple-choice question consists of an incomplete stem (question), right answer or answers, incorrect answers, close alternatives, and distractors. Of course, not all multiple-choice questions have all of the answer types. For example, you probably won't have the wrong or right answers if you're looking for customer opinion.
- **Scaling Questions:** These questions are based on the principles of the four measurement scales – nominal, ordinal, interval, and ratio. A few of the question types that utilize these scales' fundamental properties are rank order questions, Likert scale questions, semantic differential scale questions, and Stapel scale questions.
- **Pictorial Questions:** This question type is easy to use and encourages respondents to answer. It works similarly to a multiple-choice question. Respondents are asked a question, and the answer choices are images. This helps respondents choose an answer quickly without over-thinking their answers, giving you more accurate data.

TYPES OF QUESTIONNAIRES

Types of Questionnaires based on Distribution



Questionnaires can be administered or distributed in the following forms:

- **Online Questionnaire:** In this type, respondents are sent the questionnaire via email or other online mediums. This method is generally cost-effective and time-efficient. Respondents can also answer at leisure. Without the pressure to respond immediately, responses may be more accurate. The disadvantage, however, is that respondents can easily ignore these questionnaires.
- **Telephone Questionnaire:** A researcher makes a phone call to a respondent to collect responses directly. Responses are quick once you have a respondent on the phone. However, a lot of times, the respondents hesitate to give out much information over the phone. It is also an expensive way of conducting research. You're usually not able to collect as many responses as other types of questionnaires, so your sample may not represent the broader population.
- **In-House Questionnaire:** This type is used by a researcher who visits the respondent's home or workplace. The advantage of this method is that the respondent is in a comfortable and natural environment, and in-depth data can be collected. The disadvantage, though, is that it is expensive and slow to conduct.
- **Mail Questionnaire:** These are starting to be obsolete but are still being used in some market research studies. This method involves a researcher sending a physical

data collection questionnaire request to a respondent that can be filled in and sent back. The advantage of this method is that respondents can complete this on their own time to answer truthfully and entirely. The disadvantage is that this method is expensive and time-consuming. There is also a high risk of not collecting enough responses to make actionable insights from the data.

Steps Involved in Questionnaire Design

1. Identify the scope of your research:

Think about what your questionnaire is going to include before you start designing the look of it. The clarity of the topic is of utmost importance as this is the primary step in creating the questionnaire. Once you are clear on the purpose of the questionnaire, you can begin the design process.

2. Keep it simple:

The words or phrases you use while writing the questionnaire must be easy to understand. If the questions are unclear, the respondents may simply choose any answer and skew the data you collect.

3. Ask only one question at a time:

At times, a researcher may be tempted to add two similar questions. This might seem like an excellent way to consolidate answers to related issues, but it can confuse your respondents or lead to inaccurate data. If any of your questions contain the word “and,” take another look. This question likely has two parts, which can affect the quality of your data.

4. Be flexible with your options:

While designing, the survey creator needs to be flexible in terms of “option choice” for the respondents. Sometimes the respondents may not necessarily want to choose from the answer options provided by the survey creator. An “other” option often helps keep respondents engaged in the survey.

5. The open-ended or closed-ended question is a tough choice:

The survey creator might end up in a situation where they need to make distinct choices between open or close-ended questions. The question type should be carefully chosen as it defines the tone and importance of asking the question in the first place. If the questionnaire requires the respondents to elaborate on their thoughts, an open-ended question is the best choice. If the surveyor wants a specific response, then close-ended questions should be their primary choice. The key to asking closed-ended questions is to generate data that is easy to analyze and spot trends.

6. It is essential to know your audience:

A researcher should know their target audience. For example, if the target audience speaks mostly Spanish, sending the questionnaire in any other language would lower the response rate and accuracy of data. Something that may seem clear to you may be confusing to your respondents. Use simple language and terminology that your respondents will understand, and avoid technical jargon and industry-specific language that might confuse your respondents. For efficient market research, researchers need a representative sample collected using one of the many sampling techniques, such as a sample questionnaire. It is imperative to plan and define these target respondents based on the demographics required.

TARGET POPULATION

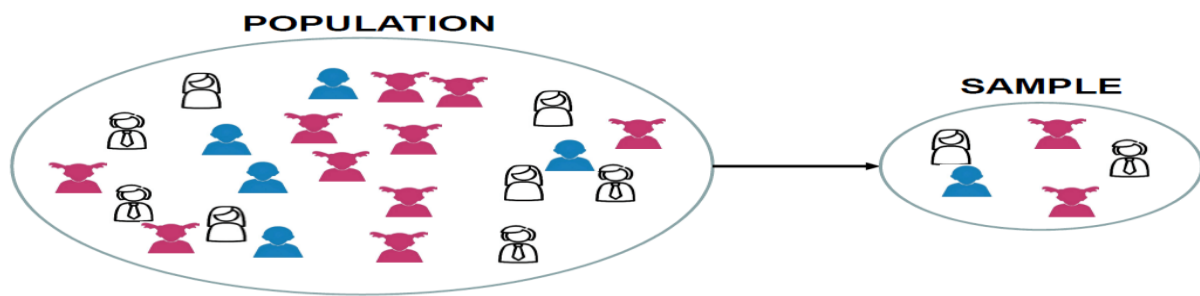
A target population is a certain group of the population that share similar characteristics and is identified as the intended audience for a product, advertising or research. It is a portion of the whole universe of people selected as the objective audience.

What Does Target Population Mean?

Also known as target audience, this term refers to a group of people that possess certain attributes that can be classified properly to separate them from the entire population. The purpose of this technique is to understand and evaluate their preferences and behaviours in order to market a given product or service or to study a given element that appears among them like behaviour patterns. It is a concept that relates with market segmentation strategies employed by companies.

For example, a given company can identify its target population as women between 21 and 35 years old living in certain geographical location. Nevertheless, this is still a broad target that will have very distinctive needs. In order to homogenize their needs properly, the target must be narrowed, which is the job of market segmentation. By employing demographic and psychographic analysis to identify particular clusters among this initial target, companies can establish market segments that they can serve more adequately, employing different strategies to reach each of them.

Population and Sample

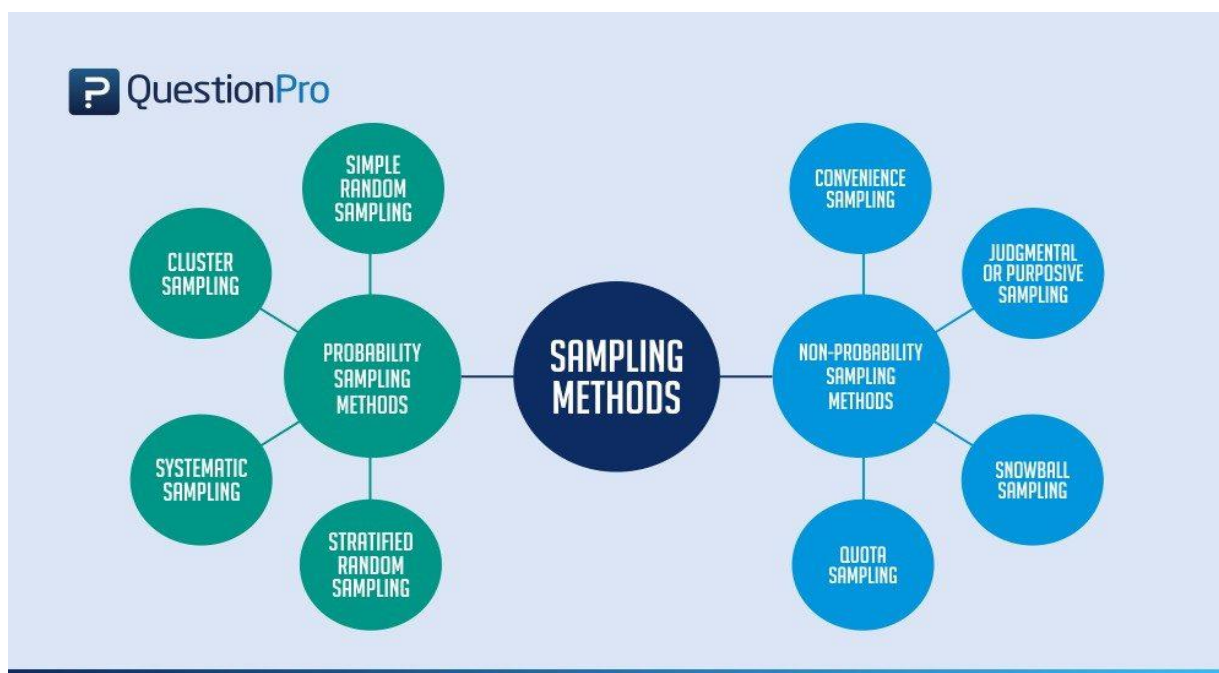


SAMPLING

Sampling is a technique of selecting individual members or a subset of the population to make statistical inferences from them and estimate characteristics of the whole population. Different sampling methods are widely used by researchers in market research so that they do not need to research the entire population to collect actionable insights. It is also a time-convenient and a cost-effective method and hence forms the basis of any research design. Sampling techniques can be used in a research survey software for optimum derivation.

For example, if a drug manufacturer would like to research the adverse side effects of a drug on the country's population, it is almost impossible to conduct a research study that involves everyone. In this case, the researcher decides a sample of people from each demographic and then researches them, giving him/her indicative feedback on the drug's behaviour.

SAMPLING METHODS



Types of sampling: sampling methods

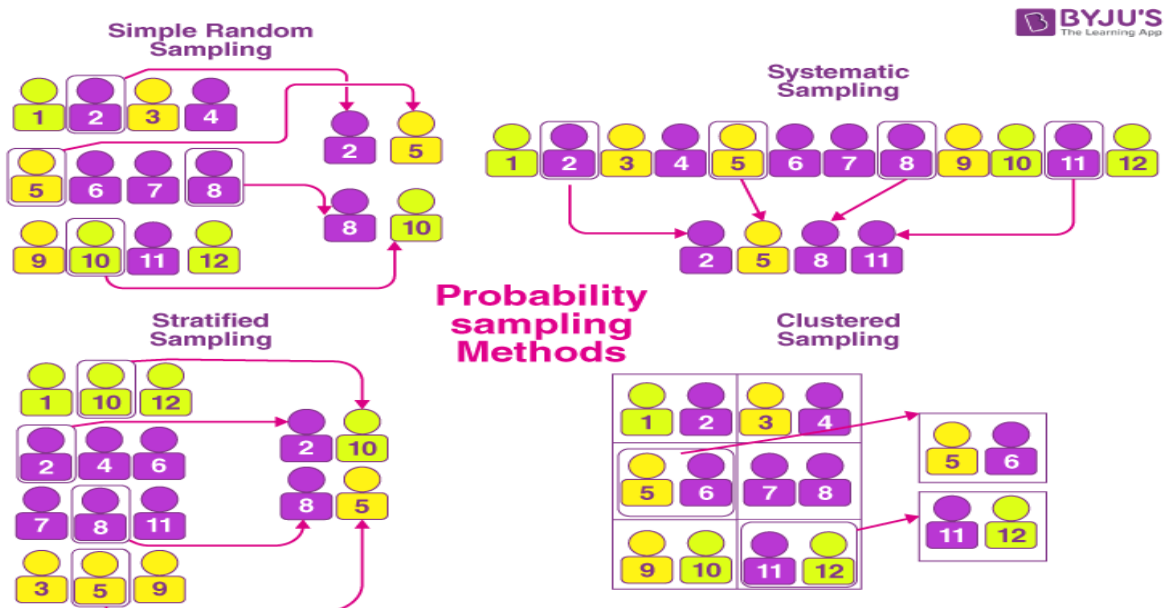
Sampling in market research is of two types – probability sampling and non-probability sampling.

- **Probability sampling:** Probability sampling is a sampling technique where a researcher sets a selection of a few criteria and chooses members of a population randomly. All the members have an equal opportunity to be a part of the sample with this selection parameter.
- **Non-probability sampling:** In non-probability sampling, the researcher chooses members for research at random. This sampling method is not a fixed or predefined selection process. This makes it difficult for all elements of a population to have equal opportunities to be included in a sample.

Types of probability sampling with examples:

Probability sampling is a sampling technique in which researchers choose samples from a larger population using a method based on the theory of probability. This sampling method considers every member of the population and forms samples based on a fixed process. **For example**, in a population of 1000 members, every member will have a 1/1000 chance of being selected to be a part of a sample. Probability sampling eliminates sampling bias in the population and gives all members a fair chance to be included in the sample.

There are four types of probability sampling techniques:



- **Simple random sampling:** One of the best probability sampling techniques that helps in saving time and resources, is the Simple Random Sampling method. It is a reliable method of obtaining information where every single member of a population is chosen randomly, merely by chance. Each individual has the same probability of being chosen to be a part of a sample. For example, in an organization of 500 employees, if the HR team decides on conducting team building activities, it is highly likely that they would prefer picking chits out of a bowl. In this case, each of the 500 employees has an equal opportunity of being selected.
- **Cluster sampling:** Cluster sampling is a method where the researchers divide the entire population into sections or clusters that represent a population. Clusters are identified and included in a sample based on demographic parameters like age, sex, location, etc. This makes it very simple for a survey creator to derive effective inference from the feedback. For example, if the United States government wishes to evaluate the number of immigrants living in the Mainland US, they can divide it into clusters based on states such as California, Texas, Florida, Massachusetts, Colorado, Hawaii, etc. This way of conducting a survey will be more effective as the results will be organized into states and provide insightful immigration data.
- **Systematic sampling:** Researchers use the systematic sampling method to choose the sample members of a population at regular intervals. It requires the selection of a starting point for the sample and sample size that can be repeated at regular intervals. This type of sampling method has a predefined range, and hence this sampling technique is the least time-consuming. For example, a researcher intends to collect a systematic sample of 500 people in a population of 5000. He/she numbers each element of the population from 1-5000 and will choose every 10th individual to be a part of the sample ($\text{Total population} / \text{Sample Size} = 5000 / 500 = 10$).
- **Stratified random sampling:** Stratified random sampling is a method in which the researcher divides the population into smaller groups that don't overlap but represent the entire population. While sampling, these groups can be organized and then draw a sample from each group separately. For example, a researcher looking to analyze the characteristics of people belonging to different annual income divisions will create strata (groups) according to the annual family income. Eg – less than \$20,000, \$21,000 – \$30,000, \$31,000 to \$40,000, \$41,000 to \$50,000, etc. By doing this, the researcher concludes the characteristics of people belonging to different income groups.

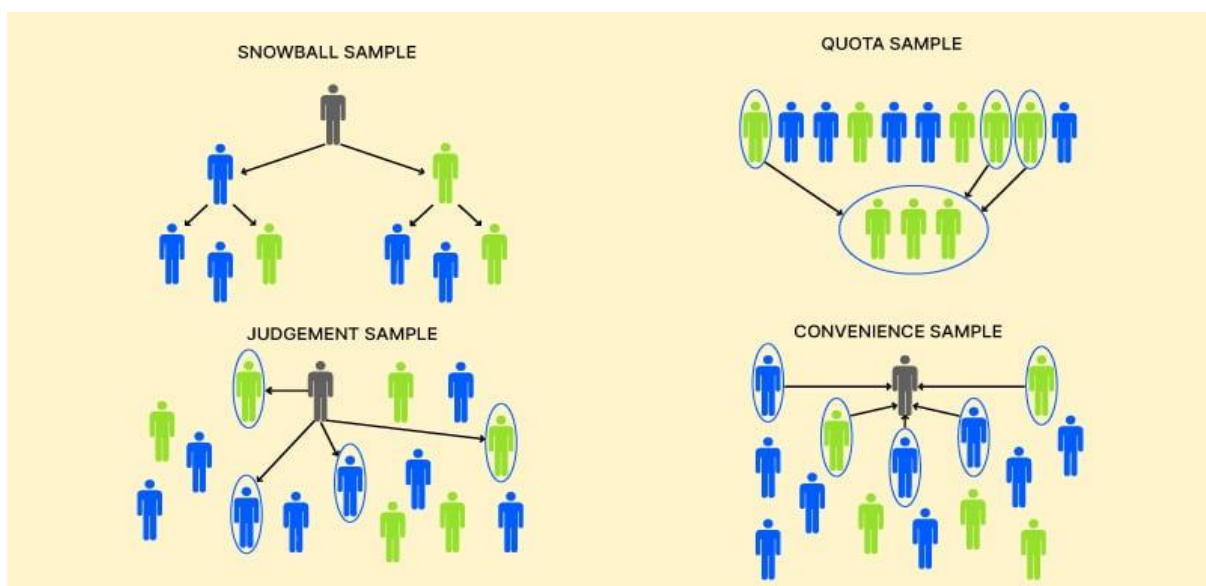
Uses of probability sampling

There are multiple uses of probability sampling:

- **Reduce Sample Bias:** Using the probability sampling method, the bias in the sample derived from a population is negligible to non-existent. The selection of the sample mainly depicts the understanding and the inference of the researcher. Probability sampling leads to higher quality data collection as the sample appropriately represents the population.
- **Diverse Population:** When the population is vast and diverse, it is essential to have adequate representation so that the data is not skewed towards one demographic. For example, if Square would like to understand the people that could make their point-of-sale devices, a survey conducted from a sample of people across the US from different industries and socio-economic backgrounds helps.
- **Create an Accurate Sample:** Probability sampling helps the researchers plan and create an accurate sample. This helps to obtain well-defined data.

Types of non-probability sampling with examples

The non-probability method is a sampling method that involves a collection of feedback based on a researcher or statistician's sample selection capabilities and not on a fixed selection process. In most situations, the output of a survey conducted with a non-probable sample leads to skewed results, which may not represent the desired target population. But, there are situations such as the preliminary stages of research or cost constraints for conducting research, where non-probability sampling will be much more useful than the other type.



Four types of non-probability sampling explain the purpose of this sampling method in a better manner:

- **Convenience sampling:** This method is dependent on the ease of access to subjects such as surveying customers at a mall or passers-by on a busy street. It is usually termed as convenience sampling, because of the researcher's ease of carrying it out and getting in touch with the subjects. Researchers have nearly no authority to select the sample elements, and it's purely done based on proximity and not representativeness. This non-probability sampling method is used when there are time and cost limitations in collecting feedback. In situations where there are resource limitations such as the initial stages of research, convenience sampling is used. For example, start-ups and NGOs usually conduct convenience sampling at a mall to distribute leaflets of upcoming events or promotion of a cause they do that by standing at the mall entrance and giving out pamphlets randomly.
- **Judgmental or purposive sampling:** Judgemental or purposive samples are formed by the discretion of the researcher. Researchers purely consider the purpose of the study, along with the understanding of the target audience. For instance, when researchers want to understand the thought process of people interested in studying for their master's degree. The selection criteria will be: "Are you interested in doing your masters in ...?" and those who respond with a "No" are excluded from the sample.
- **Snowball sampling:** Snowball sampling is a sampling method that researchers apply when the subjects are difficult to trace. For example, it will be extremely challenging to survey shelterless people or illegal immigrants. In such cases, using the snowball theory, researchers can track a few categories to interview and derive results. Researchers also implement this sampling method in situations where the topic is highly sensitive and not openly discussed for example, surveys to gather information about HIV Aids. Not many victims will readily respond to the questions. Still, researchers can contact people they might know or volunteers associated with the cause to get in touch with the victims and collect information.
- **Quota sampling:** In Quota sampling, the selection of members in this sampling technique happens based on a pre-set standard. In this case, as a sample is formed based on specific attributes, the created sample will have the same qualities found in the total population. It is a rapid method of collecting samples.

Uses of non-probability sampling

Non-probability sampling is used for the following:

- **Create a hypothesis:** Researchers use the non-probability sampling method to create an assumption when limited to no prior information is available. This method helps with the immediate return of data and builds a base for further research.
- **Exploratory research:** Researchers use this sampling technique widely when conducting qualitative research, pilot studies, or exploratory research.
- **Budget and time constraints:** The non-probability method when there are budget and time constraints, and some preliminary data must be collected. Since the survey design is not rigid, it is easier to pick respondents at random and have them take the survey or questionnaire.

Deciding on the type of sampling to use

- For any research, it is essential to choose a sampling method accurately to meet the goals of your study. The effectiveness of your sampling relies on various factors. Here are some steps expert researchers follow to decide the best sampling method.
- Jot down the research goals. Generally, it must be a combination of cost, precision, or accuracy.
- Identify the effective sampling techniques that might potentially achieve the research goals.
- Test each of these methods and examine whether they help in achieving your goal.
- Select the method that works best for the research.

Difference between probability sampling and non-probability sampling methods

	Probability Sampling Methods	Non-Probability Sampling Methods
Definition	Probability Sampling is a sampling technique in which samples from a larger population are chosen using a method based on the theory of probability.	Non-probability sampling is a sampling technique in which the researcher selects samples based on the researcher's subjective judgment rather than random selection.
Alternatively Known as	Random sampling method.	Non-random sampling method
Population selection	The population is selected randomly.	The population is selected arbitrarily.

Nature	The research is conclusive.	The research is exploratory.
Sample	Since there is a method for deciding the sample, the population demographics are conclusively represented.	Since the sampling method is arbitrary, the population demographics representation is almost always skewed.
Time Taken	Takes longer to conduct since the research design defines the selection parameters before the market research study begins.	This type of sampling method is quick since neither the sample or selection criteria of the sample are undefined.
Results	This type of sampling is entirely unbiased and hence the results are unbiased too and conclusive.	This type of sampling is entirely biased and hence the results are biased too, rendering the research speculative.
Hypothesis	In probability sampling, there is an underlying hypothesis before the study begins and the objective of this method is to prove the hypothesis.	In non-probability sampling, the hypothesis is derived after conducting the research study.

PILOT STUDY

A **pilot study** is a research study conducted before the intended study. Pilot studies are usually executed as planned for the intended study, but on a smaller scale. Although a pilot study cannot eliminate all **systematic errors** or unexpected problems, it reduces the likelihood of making a **Type I** or **Type II** error. Both types of errors make the main study a waste of effort, time, and money.



Reasons to Employ a Pilot Study

There are many reasons to employ a pilot study before implementing the main study. Here are a few good reasons:

- To test the research process and/or protocol. These are often referred to as **feasibility studies** because the pilot study tests how possible the design is in reality. For example, are the study resources adequate, including time, finances, materials? Are there any other logistical problems that need to be addressed?
- To identify variables of interest and decide how to operationalize each one. For instance, what are the indicators of composite variables? How will variables be measured and/or computed?
- To test an intervention strategy and identify the components that are most important to the facilitation of the intervention.
- To test methodological changes to implementation or administration of an instrument and/or train personnel on the administration of instruments.
- To develop or test the efficacy of research instruments and protocols. Are there confusing or misleading questions? Is it possible to maintain maximum objectivity and reduce observer drift?
- To estimate statistical parameters for later analyses. Certain statistical analyses require the sample size is sufficiently large and contains enough variability to detect differences between groups, given there any real differences to be detected.

PRE-TESTING

Pre-testing simply means, testing the validity, reliability, practicability and sensitivity of the tool before it is used for actual data collection. The only way to gain assurance that questions are unambiguous is to try them on a selected small group of prospective respondents.

Process of Pre-testing

Pre-testing can be done in parts. Different sub-parts in the main part of the questionnaire / schedule can be differently pre-tested. So a series of small pre-test on different units of the tool can be done. A full scale pre-test of the whole tool can be done if needed finally or in lieu of the series of pre-tests is small bits. Pre-testing must be done on a sample that is representative of the population. May be 10 to 12 respondents for pre-testing are good.

Importance of pre-testing

- To detect discrepancies in the tool and rectify the same. This is needed to find where the shoe bites and making amends for the same.
- To detect the difficulties encountered by the respondents while filling up the questionnaire / schedule and make remedies for the same.
- To detect possible misunderstood, un-understood aspects of the tool and rectify the same.
- The sequence of questions is better ordered in the light of feedback received.
- To get now insights into the problem based on responses received through pre-test and incorporate them in the tool and thereby enriching the tool.
- To take note of flabby parts in the tool and remove them to make the tool slim and fit.
- To re-size the tool based on time taken for filling up the questionnaire. The tool is thus right sized.