Sampling

Sampling means the process of selecting a part of the population. A population is a group people that is studied in a research. These are the members of a town, a city or a country. It is difficult for a researcher to study the whole population due to limited resources *e.g. time, cost and energy*. Hence, the researcher selects a part of the population for his study, rather than studying the whole population. This process is known as sampling. It makes the research activity manageable and convenient for the research.

The reliability of the findings of a research depends upon how well you select the sample. A sample should be a true representative of the whole population. It should include persons from various sections and spheres of the population in order to become a true representative of the population.

The terminologies relevant to sampling are as follows:

1. **Sample:** The selected part of the population is known as a sample.
2. **Sample Size:** The number of people in the selected sample is known as sample size.
3. **Sampling Frame:** Sampling frame means the list of individual or people included in the same. It reflects who will be included in the sample. For making a sampling frame, the researcher has to make a list of names and details of all the items of the sample.
4. **Sampling Technique:** It refers to the technique or procedure used to select the members of the sample. There are various types of sampling techniques.

TYPES OF SAMPLING

There are two major types of sampling **i.e. Probability and Non-probability Sampling**, which are further divided into sub-types as follows:

1. PROBABILITY SAMPLING

1. Simple Random Sampling
2. Stratified Random Sampling
3. Systematic Sampling
4. Cluster Sampling
5. Multi-stage Sampling

2. NON-PROBABILITY SAMPLING

1. Purposive Sampling
2. Convenience Sampling
3. Snow-ball Sampling
4. Quota Sampling

PROBABILITY SAMPLING

Probability sampling is a type of sampling where each member of the population has a known probability of being selected in the sample. When a population is highly homogeneous, its each member has a known chance of being selected in the sample. For example, if we want to pick some sugar from any part of a bag containing sugar, the selected part will have similar characteristics. In such a case, each member has a known chance of being selected in a sample. Hence, the sample collected from any part of a bag containing sugar will be a true representative of the whole sugar. In such a situation, probability sampling is adopted. The extent of homogeneity of a population usually depends upon the nature of the research *e.g. who are the target respondents of the research*. For instance, you want to know community attitude towards a phenomenon. For such a study, the population serves as relatively a homogeneous group as every member of the population is the target respondents of the research.

The types of probability sampling are explained below:

1 Simple Random Sampling

In simple random sampling, the members of the sample are selected randomly and purely by chance. As every member has an equal chance of being selected in the sample, random selection of members does not affect the quality of the sample. Hence, the members are randomly selected without specifying any criteria for selection. Sometimes, the researcher may use a lottery system to select the members randomly. Simple random sampling is a suitable technique for a population which is highly homogeneous.

2 Stratified Random Sampling

In stratified random sampling, first, the population is divided into sub-groups *(known as strata)* and then members from each sub-group are selected randomly. This technique is adopted when the population is not highly homogeneous. Hence, firs the population is divided into homogeneous sub-groups on the basis of similarities of the members. Then, members from each sub-group are randomly selected. The purpose is to address the issue of less homogeneity of the population and to make a true representative sample.

3 Systematic Sampling

In systematic sampling, a member occurring after a fixed interval is selected. The member occurring after fixed interval is known as Kth element. For instance, if a research wants to select member occurring after every ten members, the Kth element become 10th element. It means for selecting a sample from 100 members will be as follows:

Sample = {10, 20, 30, 40, 50, 60, 70, 80, 90, 100}

As it follows a systematic technique for selecting members, it is called systematic sampling. The Kth element or fixed interval depends upon the size of the population and desired sample. For example, if we want to select a sample of 20 members of from the population of total 1000 member. We will divide total population over the desired sample e.g. 1000/50 = 50. It means we will select every 50th member from the population to make a sample of 20 members.

4 Cluster Sampling

In cluster sampling, various segments of a population are treated as clusters and members from each cluster are selected randomly. Though it seems similar to stratified sampling but there is difference in both. In stratified sampling, the researcher divides the population into homogeneous sub-groups on the basis of similar characteristics e.g. age, sex, profession, religion and so on. On the other hand, in cluster sampling, the does not divides the population into sub-groups or cluster but randomly select from already existing or naturally occurring sub-groups (clusters) of the population *e.g. families within a society, towns within a district, organizations within a city and so on.* A researcher may treat each family within a community as a cluster. Similarly, a researcher may treat each town within a big district as a cluster. Unlike stratified sampling where the focus is on ensuring homogeneity, in cluster sampling the focus is on ensuring the convenience for a research study. Each cluster may be more or less homogeneous but the focus is on tactfully and conveniently studying the population in terms of clusters.

5 Multi-stage Sampling

Multi-stage sampling is a complex form of cluster sampling. In multi-stage sampling, each cluster of the sample is further divided into smaller clusters and members are selected from each smaller cluster randomly. It is called a multi-stage sampling as it involves many stages. First, naturally occurring groups in a population are selected as clusters, then each cluster is divided into smaller clusters and then from each smaller cluster members are selected randomly. Even the smaller cluster can be further divided into smallest cluster depending upon the nature of the research.

NON-PROBABILITY SAMPLING

Non-probability sampling is a type of sampling where each member of the population does not have known probability of being selected in the sample. In this type of sampling, each member of the population does not get an equal chance of being selected in the sample. Non-probability sampling is adopted when each member of the population cannot be selected or the researcher deliberately wants to choose members selectively. For example, to study **impacts of domestic violence on children**, the researcher will not interview all the children but will interview only those children who are subjected to domestic violence. Hence, the members cannot be selected randomly. The researcher will use his judgment to select the members.

The types of non-probability sampling are explained as below:

1 Purposive Sampling

It is a type of sampling where the members for a sample are selected according to the purpose of the study. For example, if a researcher wants to study the impact of drugs abuse on health. Every member of the society is not the best respondent for this study. Only the drug addicts can be the best respondents for this study as they have undergone impacts of drug abuse on their health and they can provide the real data for this study. Hence, the researcher deliberately selects only the drug addicts as respondents for his study.

2 Convenience Sampling

It is a type of sampling where the members of the sample are selected on the basis of their convenient accessibility. Only those members are selected which are easily accessible to the researcher. For example, a research may visit a college or a university and get the questionnaires filled in by volunteer students. Similarly, a researcher may stand in a market and interview the volunteer persons.

3 Snow-ball Sampling

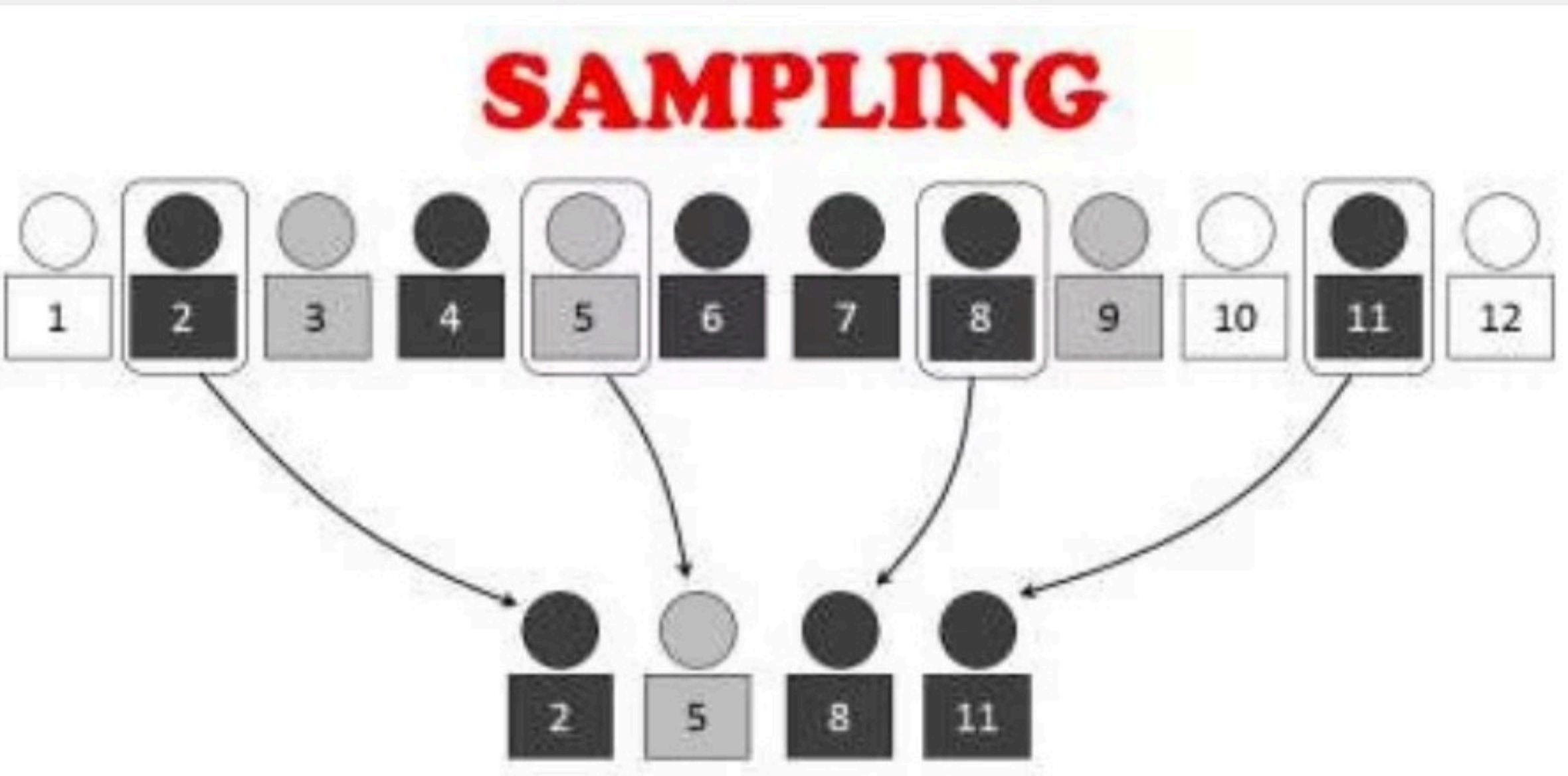
Snow-ball sampling is also called chain sampling. It is a type of sampling where one respondent identifies other respondents *(from his friends or relatives)* the study. Snow-ball sampling is adopted in situations where it is difficult to identify the members of the sample. For example, a researcher wants to study 'problems faced by migrants in an area'. The researcher may not know enough number of migrants in the area to collect data from them. In such a case, the researcher may ask a migrant to help him locate other migrants to be interviewed. The respondents may tell the researcher about his other friends who are also migrants in the area. Similarly, the new respondents (identified by last respondent) may suggest some other new respondents. In this way, the sample goes on growing like a snow-ball. Research continues this method until the required sample-size is achieved.

4 Quota Sampling

In this type of sampling, the members are selected according to some specific characteristics chosen by the researcher. These specific characteristics serve as a quota for selection of members of the sample. Hence, the members are selected on the basis of these specific characteristics *such as age, sex, religion, profession, ethnicity, interest and so on.*

What is Sampling?

Sampling may be defined as the procedure in which a sample is selected from an individual or a group of people of certain kind for research purpose. In sampling, the population is divided into a number of parts called sampling units.



Sampling

Advantages of sampling

Sampling ensures convenience, collection of intensive and exhaustive data, suitability in limited resources and better rapport. In addition to this, sampling has the following advantages also.

1. Low cost of sampling

If data were to be collected for the entire population, the cost will be quite high. A sample is a small proportion of a population. So, the cost will be lower if data is collected for a sample of population which is a big advantage.

2. Less time consuming in sampling

Use of sampling takes less time also. It consumes less time than census technique. Tabulation, analysis etc., take much less time in the case of a sample than in the case of a population.

3. Scope of sampling is high

The investigator is concerned with the generalization of data. To study a whole population in order to arrive at generalizations would be impractical.

Some populations are so large that their characteristics could not be measured. Before the measurement has been completed, the population would have changed. But the process of sampling makes it possible to arrive at generalizations by studying the variables within a relatively small proportion of the population.

4. Accuracy of data is high

Having drawn a sample and computed the desired descriptive statistics, it is possible to determine the stability of the obtained sample value. A sample represents the population from which its is drawn. It permits a high degree of accuracy due to a limited area of operations. Moreover, careful execution of field work is possible. Ultimately, the results of sampling studies turn out to be sufficiently accurate.

5. Organization of convenience

Organizational problems involved in sampling are very few. Since sample is of a small size, vast facilities are not required. Sampling is therefore economical in respect of resources. Study of samples involves less space and equipment.

6. Intensive and exhaustive data

In sample studies, measurements or observations are made of a limited number. So, intensive and exhaustive data are collected.

7. Suitable in limited resources

The resources available within an organization may be limited. Studying the entire universe is not viable. The population can be satisfactorily covered through sampling. Where limited resources exist, use of sampling is an appropriate strategy while conducting marketing research.

8. Better rapport

An effective research study requires a good rapport between the researcher and the respondents. When the population of the study is large, the problem of rapport arises. But manageable samples permit the researcher to establish adequate rapport with the respondents.

Disadvantages of sampling

The reliability of the sample depends upon the appropriateness of the sampling method used. The purpose of sampling theory is to make sampling more efficient. But the real difficulties lie in selection, estimation and administration of samples.

Disadvantages of sampling may be discussed under the heads:

- Chances of bias
- Difficulties in selecting truly a representative sample
- Need for subject specific knowledge
- changeability of sampling units
- impossibility of sampling.

1. Chances of bias

The serious limitation of the sampling method is that it involves biased selection and thereby leads us to draw erroneous conclusions. Bias arises when the method of selection of sample employed is faulty. Relative small samples properly selected may be much more reliable than large samples poorly selected.

2. Difficulties in selecting a truly representative sample

Difficulties in selecting a truly representative sample produces reliable and accurate results only when they are representative of the whole group. Selection of a truly representative sample is difficult when the phenomena under study are of a complex nature. Selecting good samples is difficult.

3. In adequate knowledge in the subject

Use of sampling method requires adequate subject specific knowledge in **sampling technique**. Sampling involves statistical analysis and calculation of probable error. When the researcher lacks specialized knowledge in sampling, he may commit serious mistakes. Consequently, the results of the study will be misleading.

4. Changeability of units

When the units of the population are not in homogeneous, the sampling technique will be unscientific. In sampling, though the number of cases is small, it is not always easy to stick to the, selected cases. The units of sample may be widely dispersed.

5. Impossibility of sampling

Deriving a representative sample is di6icult, when the universe is too small or too heterogeneous. In this case, census study is the only alternative. Moreover, in studies requiring a very high standard of accuracy, the sampling method may be unsuitable. There will be chances of errors even if samples are drawn most carefully.