SAMPLING

Sample

The study sample is the sample chosen from the study population or can be defined as a unit that is selected from population. Sampling is the process of selecting observations (a sample) to provide an adequate description and inferences of the population

Advantages of Sampling

1. It has a greater adaptability.
2. It is an economical technique.
3. It has high speed for generalization.
4. According to W.G. Cocharan, “It has greater precision and accuracy in the observation”.
5. This technique has great accuracy.
6. It has a greater speed in conducting a research work.
7. It has a greater scope in the field of research.
8. It reduces the cost of observation or data collection.

Disadvantages or Limitation of Sampling:

1. Scope of biasness.(Less accuracy)
2. Problem of representative sample-Difficulty in selecting a truly representative sample.
3. Need of eligible researchers.
4. Instability of sample subjects or changeability of units i.e. in heterogeneous population.
5. There are certain situations where sampling is possible

Sampling techniques

Types of Sampling Designs/Methods of Sampling

1. Probability Sampling
2. Non-Probability Sampling

Probability Sampling

1. Random Sampling
2. Systematic Sampling
3. Stratified Sampling
4. Multistage Sampling
5. Cluster Sampling
6. Multiple Sampling or Double Sampling

7. Non-Probability Sampling

1. Incidental or Accidental Sampling
2. Judgment Sampling
3. Purposive Sampling
4. Quota Sampling

5. Difference between Probability and Non-Probability Sampling

Probability Sampling	**Non-probability Sampling**
It is a method of sampling which gives the probability that a sample is representative of population.	In the absence of any idea of probability the method of sampling is known as non-probability sampling.
Probability sampling is generally used in fundamental research in which the purpose is to generalize the results	It is generally used in action researches in which one studies a class without any generalization purpose.
It refers from the sample as well as the population	There is no idea of population.

Every individual of the population has equal probability to be taken into the sample.	There is no probability of selecting any individual.
It may be representative of the population	It has free distribution
Its observations (data) are used for the inferential purpose	The observations are not used for generalization purpose
Inferential or parametric statistics are used	Non-inferential or non-parametric statistics are used
There is a risk of drawing conclusion	There is no risk for drawing conclusions.
It is based on Law of probability sampling i.e. Law of Statistical Regularity and Law of Inertia of the Large Sample	It is not based on law of probability sampling.

Probability sampling is of different types:

(1) Simple Random Sampling :

It is one in which each element of the population has an equal and independent chance of being included in the sample i.e. a sample selected by randomization method is known as simple random sample and this technique is simple randomizing. Randomization is done by using the following techniques:

Merits of Randomization:

It requires the minimum knowledge of population.

2. It is free from subjectivity and free from personal error.

3. It provides appropriate data for one's purpose.

4. The observations of the sample can be used for inferential purpose.

Demerits of Randomization:

1. It cannot ensure the representativeness of a sample.
2. It does not use the knowledge about the population.
3. Its inferential accuracy depends upon the size of the sample.

(2) Systematic Sampling:

Systematic sampling is an improvement over the simple random sampling. This method requires the complete information about the population. There should be a list of information of all the individuals of the population in any systematic way. Now we decide the size of the sample: Let the size of sample is = n and population size is = N.Now we select each N/n individual from the list and thus we have the desired size of sample which is known as systematic sample. Thus for this technique of sampling population should be arranged in any systematic way.

Merits:

1. This is a simple method of selecting a sample.
2. It reduces the field cost.
3. Inferential statistics may be used.
4. Sample may be comprehensive and representative of population.
5. Observations of the sample may be used for drawing conclusions and generalizations.

Demerits:

1. This is not free from error, since there is subjectivity due to different ways of systematic list by different individuals.
2. Knowledge of population is essential.
3. Information of each individual is essential..

This method can’t ensure the representativeness.

5. There is a risk in drawing conclusions from the observations of the sample.

(3) Stratified Sampling:

It is an improvement over the earlier methods. When we employ this technique, the researcher

divides his population into strata on the basis of some characteristics and from each of these smaller homogenous groups (strata) draws at random a predetermined number of units. Researcher should choose that characteristic as criterion which seems to be more relevant in his research work. Stratified sampling may be of three types;

(a) Disproportionate:

Means that the size of the sample in each unit is not proportionate to the size of the unit but depends upon considerations involving personal judgment and convenience. This method of sampling is more effective for comparing strata which have different error possibilities. It is less efficient for determining population characteristics.

(b) Proportionate:

It refers to the selection from each sampling unit of a sample that is proportionate to the size of the unit. Advantages of this procedure includes representativeness with respect to variables used as the basis of classifying categories and increased chances of being able to make comparisons between strata. Lack of information on proportion of the population in each category and faulty classification may be listed as disadvantages of this method.

(c) Optimum allocation:

Stratified sampling is representative as well as comprehensive than other stratified samples. It refers to selecting units from each stratum. Each stratum should be in proportion to the corresponding stratum the 50 population. Thus sample obtained is known as optimum allocation sample.

Merits:

(i) It is a good representative of the population.

(ii) It is an improvement over the earlier technique of sampling.

(iii) It is an objective method of sampling.

(iv) Observations can be used for inferential purpose.

Demerits:

(i) Serious disadvantage of this method is that it is difficult for the researcher to decide the relevant criterion for stratification.

(ii) Only one criterion can be used for stratification, but generally it seems more than one criterion relevant for stratification.

(iii) It is costly and time consuming method.

(iv) Selected samples may be representative with reference to the used criterion but not for the other.

(v) There is a risk of generalization.

(4) Multiple or Double Repetitive Sampling:

Generally this is not a new method but only a new application of the samplings. This is most frequently used for establishing the reliability of a sample. When employing a mailed questionnaire, double sampling is sometimes used to obtain a more representative sample. This is done because some randomly selected subjects who are sent questionnaires may not return them. Obviously, the missing data will bias the result of the study, if the people who fail to reply the query differ in some fundamental way from the others in respect to the phenomenon being studied. To eliminate this bias, a selected sample may be drawn at random from the non-respondents and the people interviewed to obtain the desired information. Thus this technique is also known as repeated or multiple sampling. This double sampling technique enables one to check on the reliability of the information obtained from first sample. Thus, double sampling, where in one sample is analyzed and information obtained is used to draw the next sample to examine the problem further.

Merits:

(i) Thus sampling procedure leads to the inferences of free
determine precision based on a number of observations.

(ii) This technique of sampling reduces the error.

(iii) This method maintains the procedure of the finding evaluate
the reliability of the sample.

Demerits:

(i) This technique of sampling cannot be used for a large sample . It
is applicable only for small sample.

(ii) This technique is time consuming and costly.

(iii) Its planning and administration is more complicated.

(5) Multi Stage Sampling:

This sample is more comprehensive and representative of the
population. In this type of sampling primary sample units are inclusive
groups and secondary units are sub-groups within these ultimate units

to be selected which belong to one and only one group.

Stages of a population are usually available within a group or population, whenever stratification is done by the researcher. The individuals are selected from different stages for constituting the multi stage sampling.

Merits:

(i) It is a good representative of the population.

(ii) Multistage sampling is an improvement over the earlier methods.

(iii) It is an objective procedure of sampling.

(iv) The observations from multi stage sample may be used for inferential purpose.

Demerits:

(i) It is a difficult and complex method of sampling.

(ii) It involves errors when we consider the primary stages.

(iii) It is again a subjective technique of sampling.

(6) Cluster Sampling:

To select the intact group as a whole is known as a cluster sampling. In cluster sampling the sample units contain groups of element (cluster) instead of individual members or items in the population. Rather than listing all elementary school children in a given city and randomly selecting 15 % of these students for the sample, a researcher lists all of the elementary schools in the city, selects at random 15 % of these clusters of units, and uses all of the children in the selected schools as the sample.

Merits:

(i) It may be a good representative of the population.

(ii) It is an easy method.

(iii) It is an economical method.

(iv) It is practicable and highly applicable in education.

(v) Observations can be used for inferential purpose.

Demerits:

(i) Cluster sampling is not free from errors.

(ii) It is not comprehensive.

Non-Probability Sampling Method:

Samples which are selected through non-random methods are called non probability samples. Depending upon the technique used it may be;

(1) Incidental or Accidental Sampling:

The term incidental or accidental applied to those samples that are taken because they are most frequently available i.e. this refers to the groups which are used as samples of a population because they are readily available or because the researcher is unable to employ more acceptable sampling methods.

Merits:

(i) It is very easy method of sampling.

(ii) It is frequently used method in behavioral sciences.

(iii) It reduces the time, money and energy i.e. it is an economical method.

Demerits:

(i) It is not representative of the population.

(ii) It is not free from errors.

(iii) Parametric statistics cannot be used.

(2) Judgment Sampling:

This involves the selection of a group from the population on the basis of available information assuming as if they are representative of the entire population. Here group may also be selected on the basis of intuition or on the basis of the criterion deemed to be self-evident. Generally investigator should take the judgment sample so this sampling is highly risky

Merits:

(i) Knowledge of investigator can be best used in this technique of sampling.

(ii) This method of sampling is economical.

Demerits:

(i) This technique is objective.

(ii) It is not free from errors.

(iii) It includes uncontrolled variation.

(iv) Inferential statistics cannot be used for the observation of this sampling, so generalization is not possible.

(3) Purposive Sampling:

The purposive sampling is selected by some arbitrary method because it is known to be representative of the total population, or it is known that it will produce well matched groups. The idea is to pick out the sample in relation to criterion which are considered important for the particular study. This method is appropriate when the study places special emphasis upon the control of certain specific variables.

Merits:

(i) Use the best available knowledge concerning the sample subjects.

(ii) Better control of significant variables.

(iii) Sample groups data can be easily matched.

(iv) Homogeneity of subjects used in the sample.

Demerits:

(i) Reliability of the criterion is questionable.

(ii) Knowledge of population is essential.

(iii) Errors in classifying sampling subjects.

(iv) Inability to utilize the inferential parametric statistics.

(v) Inability to make generalization concerning total population.

(4) Quota Sampling:

This combines both judgment sampling and probability sampling: on the basis of judgment or assumption or the previous knowledge, the proportion of population falling into each category is decided. Thereafter a quota of cases to be drawn is fixed and the observer is allowed to sample as he likes. Quota sampling is very arbitrary and likely to figure in municipal surveys.

Merits:

(i) It is an improvement over the judgment sampling.

(ii) It is an easy sampling technique.

(iii) It is not frequently used in social surveys.

Demerits:

(i) It is not a representative sample.

(ii) It is not free from errors.

(iii) It has the influence of regional , geographical and social factors.

(5) Snowball Sampling:

The term; snow ball sampling' has been used to describe a sampling procedure in which the sample goes on becoming bigger and bigger as the observation or study proceeds. The term snowball stems from the analogy of a snowball sample which would allow computation of estimates of sampling error and use of statistical test of significance. For example, an opinion survey is to be conducted on smokers of a particular brand of cigarette. At the first stage, we may pick up a few people who are known to us or can be identified to be the smokers of that brand. At the time of interviewing them, we may obtain the names of other persons known to the first stage subjects. Thus the subjects go on serving an informant for the identification of more subjects and the sample goes on increasing

Merit:

Snowball sampling which is generally considered to be nonprobabilistic can be converted into probabilistic by selecting subjects randomly within each stage.

Demerits:

Sampling errors may creep in.

(6) Purposive or Expert Choice Sampling:

Samples are sometimes expressly chosen because, in the light of available information, these mirror some larger group with reference to one or more given characteristics. The controls in such samples are

usually identified as representative areas (city, country, state, district), representative characteristics of individuals (age, sex, marital status, socio-economic status, race) or types of groups (administrator, counselors, teachers etc.).

These controls may be further sub-divided by specified categories within classes such as amount of training, years of experience or attitudes towards a specific phenomenon. Up-to this stage, these controls are somewhat similar to those used in satisfaction. Purposive sampling differs from stratified random sampling in that the actual selection of the units to be included in the sample in each group is done purposively rather than by random method.