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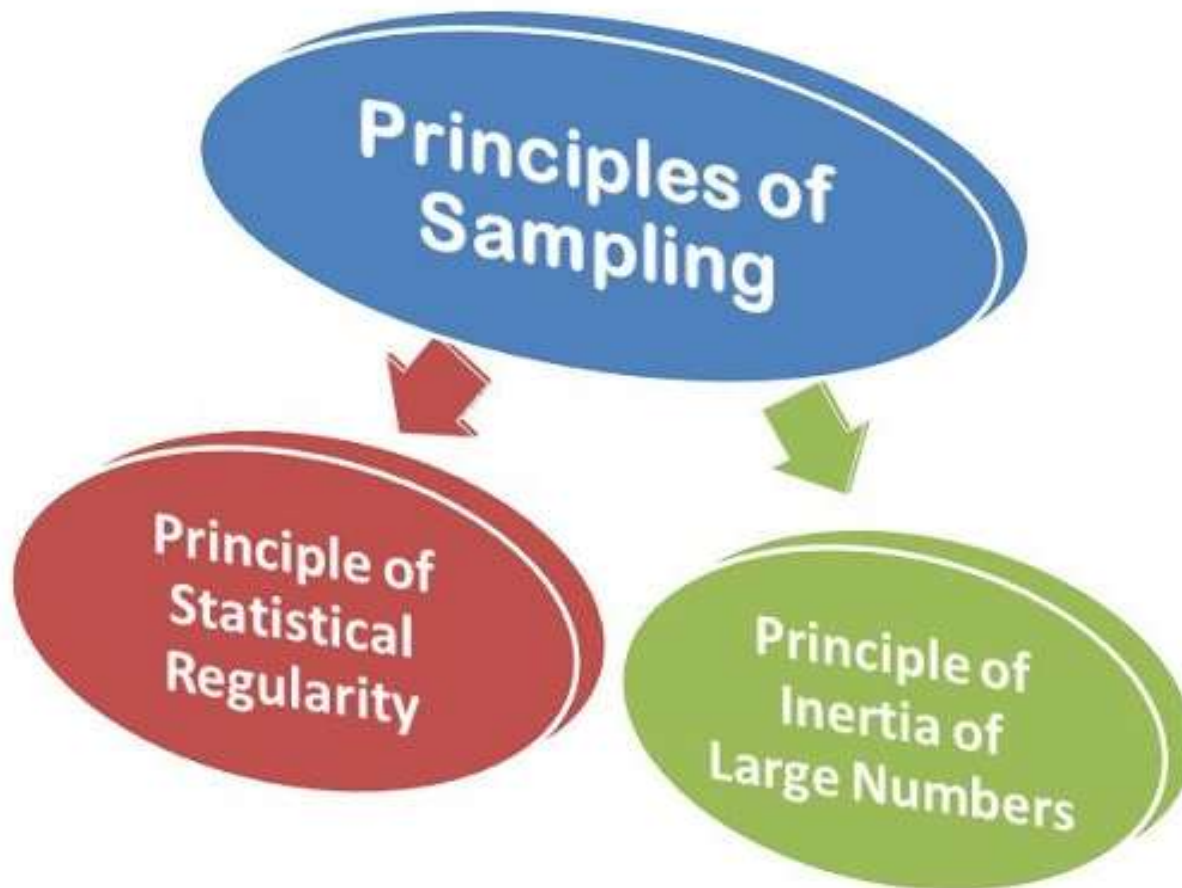
1. Principles of Sampling
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1. Principles of Sampling

Definition: The Sampling is a statistical analysis tool wherein the data are collected from a few representative items of the universe, called as a sample, on the basis of which the characteristic of the entire population can be ascertained.

Principles of Sampling

There are two important principles of sampling on which the sampling theory depends on



2. Principle of 'Statistical Regularity'

The principle of statistical regularity is derived from the theory of probability in mathematics. According to this principle, when a large number of items is selected at random from the universe, then it is likely to possess the same characteristics as that of the entire population.

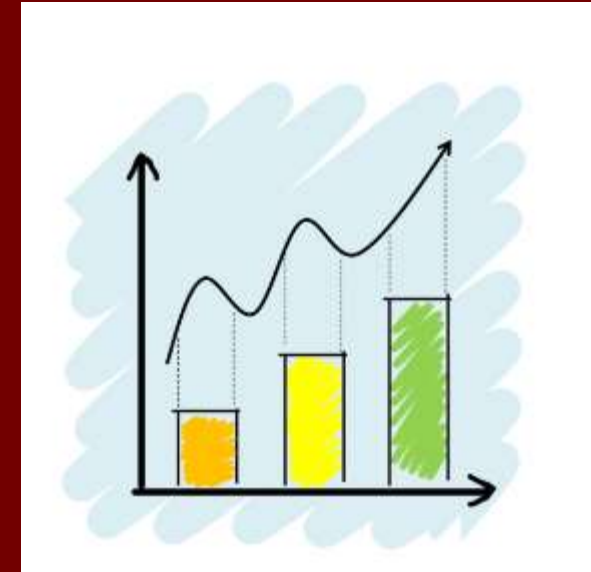
This principle asserts that the sample selection is random, i.e. every item has an equal and likely chance of being selected. It is believed that sample selected randomly and not deliberately acts as a true representative of the population. Thus, this principle is characterized by the large sample size and the random selection of a representative sample.

“The law of statistical regularity lays down that a moderately large number of items chosen at random from a very large group are almost sure on the average to possess the characteristics of the large group.”

- ***Prof. W.I. King***

“The Law of Statistical Regularity states that a reasonably large number of items selected at random from a large group of items will on average, be representative of the characteristics of the large group or population.”

- ***Wheldom***



This law holds good subject to following

- (a) Selection of items out of the parent population is random.**
- (b) The number of items in the sample should be reasonably large so as to avoid sampling fluctuation.**
- (c) Sampling results will be true on an average over a long period of time.**

Examples: If a researcher wants to do a survey on the annual family income of workers in an industry, he cannot collect information on every employee in every firm. Rather, he will select, say, 2000 workers from a total of 50000. If these 2000 workers are chosen randomly and their average annual income is calculated, it will be almost the same as the average income of the entire population.

Similarly, if a study is to be made about the cigarette buying habits of the students of a University, it is not necessary to study each and every student; instead, a few students may be chosen randomly from each college, and on that basis, conclusions drawn for all university students.

This law holds good if the following conditions are met

- (a) The sample, that is, the selection of items from the parent population, is selected randomly.**
- (b) The sample size, that is, the number of items in the sample is large enough to avoid sampling fluctuation.**
- (c) Over a long period of time, sampling results will be true on average.**

3. Principle of 'Inertia of Large Numbers'

The principle of Inertia of large numbers states that the larger the size of the sample the more accurate the conclusion is likely to be. This principle is based on the notion, that large numbers are more stable in their characteristics than the small numbers, and the variation in the aggregate of large numbers is insignificant. It does not mean that there is no variation in the large numbers, there is, but is less than in the smaller numbers.

According to the Principle of 'Inertia of Large Numbers, a larger sample size provides more accurate results, because large numbers are more stable and consistent than small numbers.

Examples

- 1. If a coin is tossed 10 times, we should expect 5 heads and 5 tails. But this experiment has only been tried a few times, it is possible that we will not get exactly 5 heads and 5 tails. The end result could be 9 heads and 1 tail, or 8 heads and 2 tails, or 7 heads and 3 tails, etc. If the same experiment is repeated 10000 times, the chance of getting 5000 heads and 5000 tails is very high, that is, the results will be very close to 50% heads and 50% tails.**
- 2. The main reason for such probability is that the experiment has been repeated a large enough number of times and the possibility of variations in one direction compensating for others in a different direction is greater. If we get continuously 5 heads at one time, we are likely to get continuously 5 tails at other times, and so on, with the number of heads and tails being more or less equal in the experiment as a whole.**

3. If we want to study the variation in rice production over a number of years and have collected data from only one or two states of India, the result would show a large variation in production due to favorable or unfavorable factors. On the other hand, if production figures are collected for all of India's states, we are likely to find little variation in the aggregate. This does not imply that production would remain constant for all years. It simply means that changes in production in individual states will be counterbalanced for the country as a whole.

4. It is very unlikely that we will get the correct information if we choose only 2 students from a class of total intelligence level because these two students could be either very intelligent or very poor. But if we select 8, 10, or more students for this purpose, it is quite possible to have a total of 100 students in the sample to learn about students of various levels.