Determination of Sampling Size

A sample size is a **part of the population** chosen for a survey or experiment. For example, you might take a survey of dog owner's brand preferences. You won't want to survey *all* the millions of dog owners in the country (either because it's too expensive or time consuming), so you take a sample size. That may be several thousand owners. The sample size is a *representation* of all dog owners' brand preferences. If you choose your sample wisely, it will be a good representation.

In statistics, a sample refers to the observations drawn from a population. Sample size is used in research and defines the number of subjects that should be included within a sample. Having the right sample size is crucial in finding a statistically significant result. The larger the sample size, the more reliable the results; however, larger sample size means more time and money.

In order to do proper study of a problem, one must have proper sampling. In other words, sample size should be appropriate for analysis.

An important aspect of sampling is the decision on the size of sample i.e. the number of units to be selected from the population for carrying out the research. There is no key answer or solution to defining the most appropriate size. There are certain misconceptions regarding the size of sample like the sample should be 10% of the population or the sample size is proportional to the size of the universe. However as said earlier, these are only misconceptions.

The choice of the size of sample is affected by various factors discussed as below:

1. The Nature of Population

The degree of homogeneity or heterogeneity affects the size of a sample. If the population is homogeneous with respect to the characteristics of interest then even a small size of the sample is sufficient. However if the population is heterogeneous then a larger sample would be required to ensure adequate representativeness.

2. Nature of Respondent

If the respondents are easily available and accessible then required information can be obtained from a small sample. If, however, the respondents are uncooperative and non-response is expected to be high then a larger sample is required.

3. Nature of Study

A onetime study can be conducted using a large sample. In case of research studies which are of continuous nature and are to be intensively carried out, a small sample is more suitable as it is easy to manage and retain a small sample over a long span of time.

4. Sampling Technique Used

A very important factor influencing the size of sample is the sampling technique adopted. Firstly a non-probability technique requires a larger sample than a probability technique. Secondly within probability sampling, if simple random sampling is used it requires a larger sample than if stratification is used, where a small sample is sufficient.

5. Complexity of Tabulation

While deciding on the sample size the researcher should also consider the number of categories and classes into which the findings are to be grouped and analyzed. It has been seen that more the number of categories that are to be developed the larger is the sample size. Since each category should be adequately represented, a larger sample is required to give reliable measures of the smallest category.

6. Availability of Resources

The funds and the time available to a researcher influence the size of sample. Research is a time and money intensive task, with activities like preparation of instrument, hiring and training field staff, transportation costs etc. taking up a lot of resources. Hence if the researcher does not have enough time and funds available he will opt for a smaller sample.

7. Degree of Precision and Accuracy Required

It has become clear from our earlier discussion that precision, which is measured by standard error, will be high only if S.E is less or the sample size is large. Similarly to obtain a high degree of accuracy a larger sample is required.