SAMPLING METHODS IN LIBRARY SCIENCE RESEARCH

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Abstract : The sample is the set of data collected from the population of interest or target population. A sample is collected from a sampling frame, or the set of information about the accessible units in a sample. Again, these units could be people, events, or other subjects of interest. This article has provided a comprehensive overview of the concept of sampling, types of sampling, bias in sampling and advantages of sampling.

Keywords : Sample, Probability Sampling Methods, Simple random, Systematic sampling, Stratified sampling, Clustered sampling, Non-Probability Sampling Methods, Convenience sampling, Quota sampling, Judgement (or Purposive) Sampling, Snowball sampling

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Introduction :

Sampling techniques are particularly helpful in business research because, frequently, a lot of data is produced and the researcher wants to employ a smaller, more manageable subset of data that they think properly captures the trends in the broader collection. Sampling is the act of choosing units (people, organisations, etc.) from an interest population so that by analysing the sample units, findings about the population can be generalised. It aids in determining the target demographic to be taken into account for data collecting.

Objective of this study :

Following are the main objectives of the study :

(i)   To obtain information of concept of Sampling.
(ii)   To obtain information about types of Probability Sampling Methods.
(iii)   To obtain information about type of Non Probability Sampling Methods.
(iv)   To obtain information about Bias in sampling.
(v)   To obtain information about the Sampling Advantages.

Research Methodology :

The study's research approach makes use of the methods of secondary data collection and observation.

Concept of Sampling :

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Those people who make up a sample are taken from a broader population. Sampling is the process of choosing the group from which you will actually collect data for your study. For instance, you could interview a sample of 100 students if you were examining the viewpoints of students at your university.

In statistics, sampling enables you to test hypotheses regarding a population's characteristics.

A sample is a condensed set of information that a researcher selects or picks from a larger population using a predetermined method of selection. These components are referred to as observations, sampling units, or sample points.

Types of Sampling :

A) Probability Sampling Methods :

1. Simple random sampling :

Each person is picked in this scenario purely at random, and everyone in the population has an equal likelihood of being chosen. Giving each person in a population a number and selecting which ones to include from a table of random numbers is one method of producing a random sample.

Simple random sampling lowers selection bias while allowing the sample error to be quantified, as is the case with all probability sampling techniques. The fact that it is the most user-friendly probability sampling technique is a distinct benefit. Simple random selection has the drawback of maybe not selecting enough people who have your feature of interest, especially if it is not common. Moreover, defining a comprehensive sampling may be challenging.

2. Systematic sampling :

At regular intervals, people are chosen from the sampling frame. The intervals are selected to guarantee a sufficient sample size. Every x/nth person in the population should be chosen for the sample if you need a sample size of n. Choose every 1000/100 = 10th member of the sampling frame, for instance, if you needed a sample size of 100 from a population of 1000.

In many cases, systematic sampling is easier to use and more practical than random sample. If there are underlying patterns in the order of the persons in the sample frame, for instance, and the sampling approach coincides with the periodicity of the underlying pattern, this could potentially result in bias.

3. Stratified sampling :

In this approach, the population is initially separated into subgroups (or strata) that all have a common trait. It is employed when we want to ensure that all subgroups are

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represented and we can reasonably anticipate that the measurement of interest will vary between the various subgroups.

4. Clustered sampling :

Subgroups of the population are utilised as the sampling unit rather than individuals in a clustered sample. The population is divided into clusters, which are groupings that are chosen at random to be a part of the study. Typically, clusters have previously been recognised; for instance, specific general practitioners' offices or towns may be designated as clusters. All participants in the selected clusters are then included in the research when using single-stage cluster sampling. In a two-stage cluster sampling procedure, some people are then randomly chosen from each cluster to be included. The analysis has to take clustering into account. A (one-stage) cluster sample is a suitable illustration; it is used annually in England in the General Household survey.

Non-Probability Sampling Methods :

1. Convenience sampling :

Because participants are chosen based on their availability and willingness to participate, convenience sampling is arguably the simplest technique of sampling. Although useful results can be achieved, they are subject to significant bias since the sample may not be representative of other factors, such as age or sex, and because those who volunteer to participate may differ from those who opt not to (volunteer bias). The risk of volunteer bias exists for all non-probability sampling techniques.

2. Quota sampling :

Market researchers frequently employ this sample technique. Interviewers are instructed to try to recruit a certain number of participants of a particular category. For instance, the interviewer might be instructed to go out and choose 20 adult males, 20 adult women, 10 adolescent girls, and 10 adolescent boys to interview about their viewing of television. The quotas selected should ideally proportionally reflect the traits of the underlying population.

The chosen sample may not be typical of other factors that weren't taken into account, despite the fact that it is very simple and potentially representative (a consequence of the non-random nature of sampling).

3. Judgement (or Purposive) Sampling :

This strategy, sometimes referred to as selective or subjective sampling, relies on the researcher's judgement when deciding who to ask to participate. So, to suit their needs, researchers may implicitly select a "representative" sample or target individuals who explicitly fit certain criteria. The media frequently employs this strategy while doing qualitative research and polling the public.

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The benefit of judgement sampling is that it produces a variety of replies while taking up little time and money (particularly useful in qualitative research). Nevertheless, in addition to volunteer bias, it is also vulnerable to researcher mistakes of judgement, and while the findings may be general, they may not necessarily be representative.

4. Snowball sampling:

When examining difficult-to-reach groups, the social sciences frequently employ this methodology. As more subjects who are known to the existing subjects are nominated, the sample grows in size like a snowball. For instance, participants may be asked to suggest more users for interview when a survey of risk behaviours among intravenous drug users is being conducted.

When it is difficult to choose a sampling frame, snowball sampling may be useful. Yet, there is a high chance of selection bias when choosing friends and acquaintances of subjects who have already been examined (choosing a large number of people with similar characteristics or views to the initial individual identified).

Bias in sampling :

There are five important potential sources of bias that should be considered when selecting a sample, irrespective of the method used. Sampling bias may be introduced when;

1. Any pre-agreed sampling rules are deviated from
2. People in hard-to-reach groups are omitted
3. Selected individuals are replaced with others, for example if they are difficult to contact
4. There are low response rates
5. An out-of-date list is used as the sample frame (for example, if it excludes people who have recently moved to an area)

Advantages of Sampling :

As was already said, sampling has a lot of benefits. The following are some of the most important benefits:

1. **Saved money and time :** Using a sample cuts down on the amount of people who need to be contacted, saving money and time. Comparing research with a population of millions to research utilising a sample, consider the time savings.

2. **Lessening of resource deployment :** It stands to reason that if the sample size of a research study results in a significantly smaller number of participants, the resources required will likewise be much smaller. Compared to studying the entire population, a lot smaller workforce is required for the research on the sample.

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3. Data accuracy : As the sample represents the population, the information gathered is correct. Also, the survey dropout rate is significantly lower because the respondent is willing to participate, improving the validity and quality of the data.

4. In-depth and thorough data : Because there are fewer respondents, the data gathered from a sample is in-depth and comprehensive. Instead than gathering information from a large number of respondents, more time and effort is spent with each one.

5. Extrapolate results to a wider population : Because the sample is representative of the greater population, it is safe to assume that the information gathered and examined from the sample can be extrapolated to the larger population, where it would be true.

Conclusion :

In summary, a sample is a portion of a population that is used to gauge the traits of the whole group. Sampling is crucial to research and data analysis in order to draw conclusions about a population based on a smaller sample size. There are various kinds of sampling, including probability sampling, non-probability sampling, and others, and each has benefits and drawbacks of its own. It's critical to select the appropriate sampling technique based on the research question, budget, and available resources. Also, the accuracy and generalizability of the results are greatly influenced by the sample size.

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