## Sample Selection Methods

Some of the important methods of selecting the sample are discussed below -

### Random Sampling

- Random selection ensures that all items in the population have an equal ***chance*** of selection.
- It may involve use of ***random number tables***.
- Random sampling includes two very popular methods which are discussed below

### Simple Random Sampling

- Under this method each unit of the whole population e.g. purchase or sales invoice has an equal chance of being selected.
- Samples are selected through a random number table.
- Random number tables are simple and easy to use and also provide assurance that the auditors' bias does not affect the selection.
- Each item in a population is selected by use of a random number table either with the help of a computer or picking up a number in a random way.

This method is considered appropriate provided the population to be sampled consists of reasonably similar units and fall within a reasonable range i.e it is suitable for a homogeneous population having a similar range. Example

The population can be considered homogeneous, if say, trade receivables balances fall within the range of ₹ 50,000 to ₹ 2,00,000 and not in the range between ₹500 to ₹ 11,50,000.

### Stratified Sampling

This method involves dividing the whole population to be tested in a ***few separate groups called strata*** and taking a sample from each of them.

- Each stratum is treated as if it was a separate population and
- items are selected from each of these stratum.
- The number of groups into which the whole population has to be divided is determined on the basis of auditor judgement.

Example-

The population in the range between ₹500 to ₹ 11,50,000 say for trade receivables balances may be divided into groups as follows:-

1. balances in excess of ₹ 10,00,000;
2. balances in the range of ₹ ₹,₹5,001 to ₹ 10,00,000;
3. balances in the range of ₹ 5,50,001 to ₹ ₹,₹5,000
4. balances in the range of ₹ 2,25,001 to ₹ 5,50,000; and
5. balances ₹ 2,25,000 and below.

From these above groups the auditor may pick up different percentages of items from each of the group.

- From the top group i.e. balances in excess of ₹ 10,00,000, the auditor may examine all the items;
- from the second group 25 per cent of the items;
- from the third group 10 percent of the items; and
- from the lowest group 2 percent of the items may be selected.

Random sample is chosen from each stratum using random number tables.

The reasoning behind the stratified sampling is that for a highly diversified population, weights should be allocated to reflect these differences.

It can be seen that the stratified sampling is simply an extension of simple random sampling.

Stratification means

- ***dividing*** a ***heterogeneous*** (Diversified) population
- into a ***Homogeneous*** (having similar characteristics) sub population,
- where samples are drawn from each subpopulation.

### Interval Sampling or Systematic Sampling

- Systematic selection is a selection method in which the number of sampling units in the population is ***divided*** by the ***sample size*** to ***give*** a ***sampling interval***, for example 50,
- and having determined a starting point within the first 50,
- each 50th sampling unit thereafter is selected.

- The starting point may be determined haphazardly, the sample is more likely to be truly random if it is determined by use of a computerised random number generator or random number tables.
- When using systematic selection, the auditor would need to determine that sampling units within the population are not structured in such a way that the sampling interval corresponds with a particular pattern in the population.
- Example
  - If in a population of branch sales, particular branch sales occur only as every 50th item and the sampling interval selected is also 50. The result would be that either the auditor would have selected all or none of the sales of that particular branch.
- Therefore, systematic sampling when chosen as a method should be carefully applied to bring together every type of transaction within its purview. More than one starting point can be considered to minimise such risk.

### Monetary Unit Sampling

It is a type of

- ***value-weighted selection*** in which

  - sample size,
  - selection and
  - evaluation results in a conclusion in monetary amounts.
- In this individual monetary units are identified as sampling units.

## Haphazard sampling

- Haphazard selection, in which the
  - auditor selects the sample
  - ***without following a structured technique.***
- The auditor should try to avoid any conscious bias or predictability (for example, avoiding difficult to locate items, or always choosing or avoiding the first or last entries on a page) and thus attempt to ensure that all items in the population have a chance of selection.
- Haphazard selection is not appropriate when using statistical sampling. (Because statistical sampling requires random selection, where each item in the population has a known probability of being selected, which is not guaranteed in haphazard sampling.)
- Haphazard sampling has
  - no structured approach,
  - does not involve judgement and
  - does not even use the random number tables.

When using haphazard sampling, an auditor might walk through a warehouse and select inventory items that catch their eye, or flip through a file of invoices and select documents at various points without any specific system.

## Block Sampling

- This method involves
  - ***selection*** of a ***block***(s) of
  - Contiguous (in sequence) items from within the population.
- Not typically suitable for audit sampling because
  - Items in sequence often have similar characteristics
  - Differs from characteristics elsewhere in population
  - Not appropriate when drawing conclusions about entire population
- Risk: If client knows auditor's block selection pattern, material misstatements can be manipulated
- Example
  - Take the first 100 sales invoices from the sales day book in the month of September; alternatively take any four blocks of 25 sales invoices.
- Therefore, once the first item in the block is selected, the rest of the block follows items to the completion.
- Similar to non-statistical sampling.
  - Consequently it has similar characteristics,
    - Simplicity and economy.
    - Risk of bias and establishing predictable selection patterns noticed by auditees