

All you need to know about audit sampling

(Relevant to AAT Paper 8 – Principles of Auditing and Management Information Systems and Paper III PBE Auditing and Information Systems)

David Chow FCCA, FCPA, CPA (Practising)

The purpose of audit sampling is to provide a reasonable basis for the auditor to draw conclusions about the population from which the sample is selected. This article defines audit sampling, discusses when audit samples should be applied, looks at audit risks associated with sampling and the implications of sample size, and compares the statistical sampling approach with the non-statistical sampling approach. To conclude, the article considers how results from sample tests can be evaluated.

Audit sampling

Audit sampling is the application of audit procedures to less than all the items within a population of audit relevance such that all sampling units have a chance of being selected, in order to provide the auditor with a reasonable basis on which to draw conclusions about the entire population. Readers should note that a sampling unit is not necessarily a monetary unit; it can be a physical item. For instance, a sampling unit can be an individual debtor balance, which is a monetary unit. On the other hand, a sampling unit can be an invoice or even an accounting entry, which are physical items.

Determine whether audit sampling is necessary

In practice, auditors may perform their tests on all items, specific items, and audit samples. In general, auditors are unlikely to test all items in the case of tests of controls, unless they are using computer assisted auditing techniques. Full testing in this case is impractical due to both the time and cost involved. It is more usual to do a full examination on tests of details. For example, an auditor may test all items if a population includes a small number of large value items, when there is a significant risk and other means do not provide sufficient appropriate audit evidence, or when a full examination is cost effective. Selecting specific items for testing is based on the auditor's judgement and may be subject to non-sampling risk¹. Auditors may select high value items or all items over a certain amount. These two selection methods do not constitute audit sampling because the results of audit procedures applied to items selected in these ways cannot be projected to the entire population.

Sampling risk

In the last paragraph, it is mentioned that selecting specific items for testing may be subject to non-sampling risk. Readers may ask whether applying audit sampling can eliminate all risks. The answer is "no", as sampling risk exists. Sampling risk refers to the risk that the auditor's conclusion based on a sample may be different from the

¹ Non-sampling risk is the component of detection risk that is not due to examining only a portion of the population, i.e. it is not related to sampling risk. Examples of non-sampling risk include use of inappropriate audit procedures, or misinterpretation of audit evidence and failure to recognize a misstatement or deviation. The auditor seeks to minimize non-sampling risk by proper planning, supervision and review.

conclusion if the entire population were subject to the same audit procedure. Sampling risk can lead to erroneous conclusions. In order to reduce sampling risk, the auditor can increase the sample size. Erroneous conclusions may occur on both tests of controls and tests of details.

For tests of controls, auditors are primarily concerned with erroneous conclusions in which controls are thought to be more effective than they actually are. This will affect audit effectiveness as the control risk is understated. On the other hand, auditors may waste time and effort performing additional work due to erroneous conclusions that controls are less effective than they actually are.

For tests of details, auditors are concerned with the erroneous conclusions in which a material misstatement is thought not to exist, when in fact it does. This is more likely to lead to an inappropriate audit opinion, i.e. risk of incorrect acceptance. On the other hand, risk of incorrect rejection leads to additional work to establish that the initial conclusions were incorrect.

Audit Planning

Now readers should have an understanding of the risks involved in audit sampling, the next step is to commence the audit planning. Let's review the implications of sample size. For tests of controls, the auditor makes an assessment of the expected rate of deviation based on the auditor's understanding of the relevant controls or on the examination of a small number of items from the population. This assessment is made in order to design an audit sample and to determine the sample size. For example, if the expected rate of deviation is unacceptably high, the auditor will normally decide not to perform tests of controls. For tests of details, the auditor makes an assessment of the expected misstatement in the population. If the expected misstatement is high, all items are examined or a large sample size may be used.

In determining the sample size, the auditor should consider whether sampling risk is reduced to an acceptably low level. Sample size is affected by the level of sampling risk that the auditor is willing to accept. The lower the risk the auditor is willing to accept, the greater the sample size will need to be.

Absolute assurance cannot be achieved through sampling procedures. The lower the assurance required, the smaller the required sample size. For tests of controls, the tolerable rate of deviation is the maximum deviation rate that can be accepted to conclude that the audit objective has been achieved. For tests of details, the tolerable misstatement is the maximum misstatement that can be accepted to conclude the audit objective has been achieved.

Audit efficiency may be improved if the auditor stratifies a population by dividing it into discrete sub-populations which have an identifying characteristic. The objective of stratification is to reduce the variability of items within each stratum and therefore to allow the sample size to be reduced without increasing the sampling risk. This enables the auditor to devote more time to items considered most vulnerable to material misstatement. For example, the auditor may stratify the accounts receivable balances by age and focus on the overdue accounts.

Statistical versus non-statistical sampling approaches

Once the auditor has decided to apply audit sampling, he should choose between statistical sampling and non-statistical sampling approach. Both approaches require auditor's judgment in planning, performing, and evaluating a sample. Furthermore, the auditor has to make use of his judgment in relating the audit evidence produced by the sample to other evidence when concluding whether the related account balance or class of transaction is fairly stated.

Statistical sampling is an approach to sampling with the following characteristics:

- (i) Random selection of the sample items; and
- (ii) The use of probability theory to evaluate sample results, including measurement of sampling risk.

On the other hand, a sampling approach without the above two characteristics is considered to be non-statistical sampling. In the case of tests of controls, non-statistical sampling is more appropriate because the auditor's analysis of the nature and cause of errors will often be more important than a statistical analysis of the counting of errors.

With statistical sampling, each sampling unit has a known probability of being selected, while the auditor's judgement is used to select sample items with non-statistical sampling. It is important that the auditor selects a representative sample, i.e. without bias, and the samples have characteristics typical of the population.

Non-statistical sampling can be used with tests of controls or tests of details. It does not require the use of a probabilistic selection method. Its main advantage is that it is less complex and less time consuming than statistical sampling. However, its main disadvantage is that sampling theory cannot be used to quantify sampling risk.

Random selection and systematic selection are examples of statistical sampling methods because every population item has a known probability of selection. Haphazard selection and block selection are non-statistical sampling methods because every population item does not have a known probability of selection.

Evaluating the audit sampling results

After carrying out the planned audit procedures, the auditor has to analyse the misstatements or deviations detected and uses these results to estimate the total misstatement or deviation rate in the population. When analysing these results, the auditor should consider their nature, cause and possible impacts on other audit areas and financial statements as a whole. The risk that the actual misstatement or deviation rate may exceed the tolerable misstatement or tolerable rate of deviation should be assessed.

In extremely rare circumstances, when the auditor considers a misstatement or deviation discovered in a sample to be an anomaly, the auditor shall obtain a high degree of certainty that such a misstatement or deviation is not representative of the population. The auditor shall obtain this degree of certainty by performing additional

audit procedures to obtain sufficient appropriate audit evidence that the misstatement or deviation does not affect the remainder of the population.

For tests of controls, no explicit projection of deviations is necessary since the sample deviation rate is also the projected deviation rate for the population as a whole. The auditor determines whether the tests of controls performed provide an appropriate basis for reliance on the controls, whether additional tests of controls are necessary, or whether the potential risks of misstatement need to be addressed using substantive procedures.

Projecting misstatements

The auditor is required to project misstatements for the population to obtain a broad view of the scale of misstatement. When a misstatement has been established as an anomaly, it may be excluded when projecting misstatements to the population. However, such an effect, if uncorrected, still needs to be considered in addition to the projection of the non-anomalous misstatements.

In the case of tests of details, the projected misstatement plus anomalous misstatement is the auditor's best estimate of misstatement in the population. When the projected misstatement plus anomalous misstatement exceeds tolerable misstatement, the sample does not provide a reasonable basis for conclusions about the tested population. Considering the results of other audit procedures helps the auditor to assess the risk that actual misstatement in the population exceeds tolerable misstatement, and the risk may be reduced if additional audit evidence is obtained.

If the auditor concludes that audit sampling has not provided a reasonable basis for conclusions about the tested population, the auditor may:

- (i) Ask management to investigate misstatements that have been identified and the potential for further misstatements, and make any necessary adjustments;
or
- (ii) Tailor the nature, timing and extent of those further audit procedures to best achieve the required assurance. For example, in the case of tests of controls, the auditor might extend the sample size, test an alternative control or modify related substantive procedures.

Reference

HKICPA (2010) *HKSA 530 Audit Sampling*