How to Choose an Effective and Sufficient Sample for an AML Program Audit

By Sam Adam Elnagdy, CAMS-Audit, CFE, CFCI, CCRP
Executive Overview:

The stakes are higher than ever for anti-money laundering (AML). And in their duties of independent testing for AML programs, auditors need to use the right techniques and skills to determine the effectiveness of the program.

One of the most important procedures in a successful AML program’s independent audit is the audit sampling approach, which should be designed to provide sufficient and appropriate elements to obtain a test conclusion about the whole population.

Numerous AML audit procedures may not involve sampling as inquiry and observation. However, analytical procedures apply to each item in a population under AML testing. These types of procedures should be well understood to provide the appropriate context for AML audit sampling.

In choosing a sample from a statistical to a non-statistical approach, and from a large to a small population, planning is the most important step in determining AML audit objectives and scopes, which will precede sampling design and execution.

There is always uncertainty with AML audit sampling based on the following:

- The concept of “reasonable basis for an opinion” for choosing a sample;
- The justification for accepting what some uncertainty produces from factors such as the cost and time required for testing all the data; and
- Any adverse consequences based on the testing conclusions from only a sample of the whole population

If some factors will not justify the acceptance of uncertainty, the only way will be testing the whole population. However, these circumstances will usually lead us to choose the right and represented sample from the population.

In summary, AML audit sampling is the application of an AML audit procedures to less than 100 percent of the items within a testing area for the purpose of evaluating the effectiveness of the program in that area.
This white paper describes one of the best practices for choosing an effective and sufficient sample for an AML program audit.

**AML Program Structure:**

In any financial institution, its AML compliance program applies to the entire firm to ensure the firm’s compliance with the Bank Secrecy Act (BSA), the USA PATRIOT Act, and other applicable international AML regulations that govern AML and anti-terrorist finance efforts.

An AML program is a set of policies and procedures designed to guard financial institutions against someone using the firm to facilitate money laundering or terrorist financing.

The main components that must be included are:

1) Internal policies, procedures, and controls reasonably designed to assure compliance with the BSA and implementing regulations.

2) Appointment of a designated compliance officer to oversee the program’s day-to-day operations.

3) An ongoing training program.

4) **An independent audit**.

What roles can be done in an independent audit component of the AML Program?

The audit department of a financial institution is responsible for performing independent, risk-based internal audits to test the integrity and effectiveness of the AML compliance program for the whole firm. Within these audits, evaluation of related policies, procedures, risks and controls should be examined to ensure compliance with applicable AML laws and regulations.

Independent AML audit uses the same approach like any other audit. This includes: planning, fieldwork, and reporting.

In the planning phase, the following should been identified:
• Key business objectives;
• Key risks and scopes;
• Timing and use resources based on full understanding of the business structure of the firm (e.g., its geographical locations, existing products and services, clients, activity, and key stakeholders); and
• Key performance indicators, organizational or other changes, risk assessment rating and applicable laws and regulations.

All the above will be the backbones of the fieldwork part of the independent audit.

**Risk-Based Approach:**

Independent auditors should use a risk-based approach for determining the risk and exposure of the elements in the audit scope. These elements could be suspicious activity reports (SARs) filing, customer identification programs (CIPs) and know your customer (KYC) records, correspondent banks certificates, transactions, wires transfer, training records, and etc.

The risk assessment references or matrices should been created, updated and used to evaluate and test the AML program risks and controls.

These matrices will address risks and expected controls besides how to design its testing steps.

**Fieldwork:**

Fieldwork in an independent AML program audit is the process of gathering evidence and analyzing and evaluating that evidence as directed by the approved independent audit procedures.

The audit objectives and procedures should been performed on a risk-based approach, so that the most important and significant risks are examined first. Conclusions on audit objectives will form the basis for an audit opinion.

Throughout fieldwork, professional judgment should been used to:
a) Determine whether evidence gathered is sufficient, relevant, competent, and useful to conclude on the established objectives; and
b) Based on the information available, reassess the audit objectives, scope, and procedures to ensure efficient use of audit resources.

**Sampling:**

Audit sampling is the representation of less than 100 percent of the items being audited, for evaluating the whole population of these items.

There are two main approaches to audit sampling: non-statistical and statistical.

In both approaches, there is a need for professional judgment in planning, choosing and evaluating the sample. The findings produced by the sample should form the conclusion about the whole population.

**Sampling Risk:**

Sampling risk arises from the possibility that if the test was restricted to a small sample, the auditor’s conclusions from testing only this sample will be different from the conclusions the auditor would have reached if the same tests were applied to the whole population.

Thus, the auditor should apply professional judgment in assessing sampling risk. Sampling should assist the auditor in reaching a conclusion relating to the entire population.

**Sampling Techniques:**

Audit testing for AML programs will vary between many areas and items. For example:

- Control where the auditor will look for any evidence, to determine the right execution of the control as it designed.
- Policies and, procedures where the auditor will look and see how these are sufficient and implemented.
- Transaction monitoring and how the alerts are coming through.
- SARs filing and how they were timely filed and if these were escalated.
• CIP and KYC records completion and more.

In most cases, a combination of testing will be required to conclude on the overall effectiveness of any area of the AML program.

**What steps should be developed for testing using sampling?**

1- Determine the objective of the test.

2- Define the population:
   A- What element should be tested?
   B- What are the dates for the population (From-To) based on the test scope?
   C- Source of the population’s data and data integrity.
   D- Narrow and segment the population based on the test objective.
   E- Stratify the population to reach better precision in sampling and issue identification. Usually more than one factor will contribute to segmentation to define the stratified population.

3- Determine what sample size you will choose and what confidence level you would like to obtain (OCC recommend 95 percent).\(^1\)
   Confidence level represents the assurance level of reliability of test results and the ability to obtain conclusions.

4- Determine the method of selecting the samples.
   Many methods can be used to select the samples; the following are methods of sample selection:

   A- *Interval*- Items are selected at every (N) number.
   B- *Random numbers generator* – Every unit will have the same probability of being selected.

---

\(^1\) Department of The Treasury- Office of the Comptroller of the Currency Sampling Methodologies
C- *Judgmental* – Selecting sample with intended bias. A judgmental method is not preferred if the rational and the intended bias cannot be explained in detail.

D- *Haphazard* – Selecting sample without any conscious bias.

E- Combination of any of the above.

5- Sample rational should be documented in the work paper, since it will explain the method used, source of population and the sample size besides the test objectives.

6- Perform the testing.

7- Evaluate the testing results.

**Determining the Sample Size:**

Sample sizes should be determined based on the rating of inherent risk that an AML control is designed to mitigate and its frequency. The risk-based approach should be implemented to focus on high-risk factors for BSA/AML audit activities.

Usually tables or formulas are used to compute a statistically valid sample size based on judgments about many populations' factors or characteristics.

If non-statistical sampling is used, the auditor should use professional judgment to relate same factors in determining an appropriate sample size. This will produce an efficient and effective sample size as it was designed from statistical sampling.

The auditor should select a sample that it can be representative of the population; based on his or her understanding of AML risk and control in addition to complying with the regulators requirements.

The auditor should identify the characteristics that would indicate the performance of controls over AML risks to be tested.
If the entire population is not tested through an automated auditing software, then auditor should use a risk-based sampling approach to satisfy the testing of activities in the AML program.

The most important issue in the sampling will be its size, and should be selected using a risk-based approach. The focus should be increased on high-risk factors like specific clients, politically exposed persons (PEPs), products, regions, or countries.

Here we will ask the following questions: What is the right sample size? Can we use a formula to calculate it like in statistical sampling? Can we use the same statistical sampling framework? Is there a minimum number we have to test?

The answer is YES to all of the above questions. Some formulas calculate a statistically valid sample size based on statistical sampling assumptions, like sample size percentage, confidence interval and confidence level.

**Let us discuss the definitions of these assumptions:**

**Sample Size Percentage:**

The accuracy of selecting a sample depends on the percentage of the sample, it could be 90 percent or 70 percent or 20 percent, but it is better to be in the middle of the road, so a 50 percent would be appropriate, as it will give an accuracy level of the worst-case scenario.

**Confidence Interval:**

It is the margin of error, usually a plus-or-minus figure, and is a number between one and 50. A smaller number means a bigger sample size, and a bigger confidence interval number will mean a smaller sample size.

**Confidence Level:**

It tells us how sure we are that the sample represents the whole population. It is a number of certainty regarding our sample. A 95 percent confidence level means we can be 95 percent certain and a 99 percent confidence level means...
we can be 99 percent certain. Usually these are the two numbers used in most of the sampling size: 95 percent and 99 percent confidence level.

The Formulas:\(^2\)

For Infinite Population

Sample Size \( SS = Z^2 \times (p) \times (1-p) / c^2 \)

Where:

\( Z = \) Confidence level 95 percent or 99 percent

\( P = \) Percentage expresses as decimal, usually = 0.5 for sample size needed

\( C = \) Confidence interval, expressed as decimal

For Finite Population

Sample Size \( \text{popSSpop} = SS / 1 + \{(SS-1)/\text{pop}\} \)

Where:

\( \text{pop} = \) Population

The above were the formulas used to calculate the sample size out of a population with a desired confidence level, confidence interval, and a probability percentage. The next questions are: What are the numbers the auditor has to use as assumptions in the above formulas for AML auditing? Can the auditor use the same approach to calculate the sample in an AML Audit?

The answer is it varies from one auditor to another and from one financial institution to another. Most of the financial institutions have their own approaches and tables to calculate from. Financial institutions depend solely on their audit department to come up with a unique approach to satisfy their risk mitigation

---


How to Choose an Effective and Sufficient Sample for an AML Program Audit
By Sam Adam Elnagdy, CAMS-Audit, CFE, CFCI, CCRP
Some other institutions will leave all of these decisions and assumptions to the auditor in charge and depend on what kind of audit is running and on what kind of activities the audit is testing.

The following is my own experience as an auditor and it is just an effort to simplify the process. I looked at the formula from the point of view of an AML auditor who understands the AML risks, the controls in place and the risk rating.

The assumptions in the sample size formula should be based on the risk rating, and the AML risk rating is almost categorized the same way in each financial institution, between High, Medium, or Low. So, the issues will be: What numbers can be used as assumptions and are they correlated to the risk rating?

**We need to come up with the following:**

1. The right confidence interval; and
2. The desired confidence level.

**What we should know or have:**

1. The total population number;
2. The percentage of sampling which best practice specified as 50 percent for the worst-case scenario.
3. Risk rating: high, medium or low.

**Assumptions Efforts:**

**Confidence Interval:** It is the margin of error, usually a plus-or-minus figure and usually a number between one and 50. If it is a small number it means a bigger sample size, and if it is a bigger confidence interval number, it will mean a smaller sample size.

1. If I want to test high-risk rated item, I would prefer to test a larger sample size. On the other hand, if I want to test low-risk rated items, I would prefer a smaller sample size.
2. From experience and best practice through many AML Audits, I found that choosing a confidence interval of 10 for high-risk rating, a 12.50 for medium-risk rating and a 15 for low-risk rating, my sample number would...
be satisfied, where my choice of selected items depend solely on my judgmental bias.

**Confidence Level:** Usually these are the two numbers used in most of the sampling sizes: 95 percent and 99 percent confidence level.

1- If I use a 95 percent confidence level, it will produce smaller sample size. While if I use a 99 percent confidence level, it will produce a larger sample and it will be more accurate.

2- From experience and best practice through many AML audits, I found that by using both numbers for each risk rating, it will give me a range of sample numbers. I can utilize these sample numbers for the benefit of my testing based on my judgment, experience and prior audit findings.

**Lessons from the Fieldwork:**

1- The sample size should be determined for each risk rating category, and then correspond percentage weight of each risk to come up with the sample size for all based on the overall higher risk.

2- The maximum size of the population should not exceed 20,000.

3- More samples should be selected in case of a large number of findings or extreme exposure of risk with failed control.

The following table presents the result from the formulas after applying the above assumptions:

**Sample Size Table:**

<table>
<thead>
<tr>
<th>Total Population</th>
<th>High Risk Rating Sample Size Range Confidence Interval 10 / Confidence Level 95%/99%</th>
<th>Medium Risk Rating Sample Size Range Confidence Interval 12.5 / Confidence Level 95%/99%</th>
<th>Low Risk Rating Sample Size Range Confidence Interval 15 / Confidence Level 95%/99%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 100</td>
<td>49 - 63</td>
<td>38 - 52</td>
<td>30 - 43</td>
</tr>
<tr>
<td>101 - 300</td>
<td>73 - 107</td>
<td>51 - 79</td>
<td>37 - 59</td>
</tr>
<tr>
<td>301 - 500</td>
<td>81 - 125</td>
<td>55 - 88</td>
<td>39 - 65</td>
</tr>
<tr>
<td>501 - 1000</td>
<td>88 - 143</td>
<td>58 - 96</td>
<td>41 - 69</td>
</tr>
<tr>
<td>1001 - 5000</td>
<td>94 - 161</td>
<td>61 - 104</td>
<td>42 - 73</td>
</tr>
<tr>
<td>5001 - 20000</td>
<td>95 - 165</td>
<td>61 - 106</td>
<td>43 - 74</td>
</tr>
</tbody>
</table>

How to Choose an Effective and Sufficient Sample for an AML Program Audit
By Sam Adam Elnagdy, CAMS-Audit, CFE, CFCI, CCRP
Case Study:

Assume an International Bank (XYZ) has clients’ base in North America (U.S. and Canada), South America (Argentina and Brazil), Europe (U.K., Italy and Russia), and some other countries in the rest of the world.

The audit department, as part of its continuous auditing, decides to start auditing the completeness of the KYC and CIP records of new clients of their investment banking line of business (LOB) in Europe.

The targeted control review focuses on the key KYC risks and controls for new accounts from start to finish for the investment banking LOB.

The auditor will determine a sample size based on the table above with a confidence level of 99 percent.

The data received of new accounts for the time scope of the audit in Europe accompanied with risk rating of each country is as follows:

Europe:

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of New Accounts</th>
<th>Country Risk Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>8750</td>
<td>Low</td>
</tr>
<tr>
<td>Russia</td>
<td>5850</td>
<td>High</td>
</tr>
<tr>
<td>Italy</td>
<td>3900</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Total new accounts in Europe are **18500** accounts.

The U.K. has **47 percent** of the total accounts number.

Russia has **32 percent** of the total accounts number.

Italy has **21 percent** of the accounts number.

The overall risk rating for the three countries is **HIGH**.
Europe Sample Size:

Based on the sample size table, with total new accounts of **18500**, a confidence level of **99 percent**, and an overall risk rating of **HIGH**, the sample size should be **165** accounts.

The question now is: How can we distribute the 165 accounts across the three countries?

Let us look on each country’s accounts number and risk rating separately:

**United Kingdom:**
- 8750 new accounts.
- Low risk rating

*Based on the above and the sample size table, the sample size for the U.K. with a confidence level of 99 percent, should be **47** accounts.*

**Russia:**
- 5850 new accounts
- High risk rating

*Based on the above and the sample size table, the sample size for Russia with a confidence level of 99 percent, should be **165** accounts.*
Based on the above and the sample size table, the sample size for Italy with a confidence level of 99 percent, should be 104 accounts.

By adding the suggested sample size for each country, we will come up with 316 accounts (47 + 165 + 104); however, the sample size for all accounts in Europe (The three countries U.K., Russia and Italy), as we calculated above, should be 165 accounts.

<table>
<thead>
<tr>
<th>Country</th>
<th>Separate Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>47</td>
</tr>
<tr>
<td>Russia</td>
<td>165</td>
</tr>
<tr>
<td>Italy</td>
<td>104</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>316</strong></td>
</tr>
</tbody>
</table>

Percentage Weight of Each Country Separate Sample Size for the Total Size of 316 Accounts:
Based on the percentage weight of each country and the total number of the sample size of 165 accounts for the three countries:

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage Weight</th>
<th>Sample Size out of 165</th>
<th>Approximately Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>15%</td>
<td>15% of 165</td>
<td>25</td>
</tr>
<tr>
<td>Russia</td>
<td>52%</td>
<td>52% of 165</td>
<td>86</td>
</tr>
<tr>
<td>Italy</td>
<td>33%</td>
<td>33% of 165</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>165</td>
</tr>
</tbody>
</table>

Conclusion:

- Audit sampling is the application of an audit to less than 100 percent of all items in scope for audit.
- Auditor judgment is very important in planning and performing the sampling procedure to evaluate the test results.
- Sample choice should be risk-based
- Sample size is important in audit sampling procedures.