

## STATISTICAL INSTRUMENTS USED IN THE AUDIT PROCESS

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### Abstract

*This study is about the importance of statistical instruments in the audit process. No theory has any value without a practical finality. If we are not using adequate tools and technologies to highlight the importance of the audits from a practical standpoint, we wouldn't be able to improve on the audit systems.*

*As in any emerging field we need a lot of feedback. The process starts by developing a theory, applying the theory in the field, analyzing the results, make needed changes and corrections, and then, if necessary, revise the theory. Thru this kind of process the statistical audit instruments (tools) are at the foundation of theories, analysis, continuing a cycle meant to bring improvements in this field.*

*Considering that we can not analyze the whole audit process, the most utilized technique is polling. In order for the results to be correct we need to ensure that we have a fair representation both as subject and as scale. We also have to keep in mind the human error margin. All the results are being analyzed by an auditor, who needs to be objective and very careful in handling the data. It is the auditor's ultimate responsibility to ensure that the final conclusions drawn at the end of the audit process are correct and provide useful information to the customers.*

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### 1. THE IMPORTANCE OF USING STATISTICAL METHODS IN AUDITING

Nowadays, the audit wins more and more ground in the economic field. The audit is a field in development and improvement, thus, more and more users understand its importance.

Most of the companies that request audit services are companies that perform their activities at an international level. They have discovered the need of auditing as they have several branch offices, each of them performing the activity according to the rules of the group, and according to their own rules. Under these conditions, the managers have felt that they should also have a competent opinion from persons outside the company regarding the company's state.

A bank may take a favourable or an unfavourable decision regarding the granting of a credit, according to the results of an audit. Although the decision could be favourable, in the favour of a credit, the bank could apply a higher charge, if according to the results of the audit it is found out that the financial situations have not been prepared correctly.

An audit cannot be made on each document or operation performed by an audited company, thus, certain statistical methods that should supply sufficient and significant data for the auditor to draw a clear conclusion are necessary.

The work of an auditor is complex. It starts from the planning and defining of an auditing method, to the performance of the tests on the control mechanisms and the substantial tests of the operations, to the performance of the analytical procedures and the tests of the balances details, to the finalization of the audit and the issue of an audit report. (Arens Loebbecke – Audit, an integrated approach).

The audit sample is used to facilitate as much as possible the work of an auditor. If the volume of the documents to be audited is impressive, besides the fact that the auditor should organize the audit as detailed as possible, he will not verify all the accounting documents. The sample will be represented by the application of the audit procedures for less than 100% of the elements of the balance of the accounts and the transactions of the company.

## **2. TECHNIQUE OF THE SURVEY**

### *2.1. THE PHASES THAT SHOULD BE FOLLOWED IN THE SELECTION OF A SAMPLE*

1. The selection of the techniques. Factors that emerge in the selection of the techniques:

- the volume of the mass, its capacity to fulfil the objectives of the survey;
  - cost / efficacy ratio of the technique;
2. Determining the volume of the sample;
3. Selection of the sample. It should be a representative sample;
4. Study of the sample;
5. Evaluation of the results;
6. Conclusions of the survey.

### *2.2. METHODS USED IN THE SELECTION OF THE ELEMENTS FOR THE TESTING WITHIN AN AUDIT PROCESS*

When the audit procedures are selected, the auditor may choose from the following testing elements:

- the full check of the elements (testing 100% of the audited elements);
- selection of certain elements;
- selection of a sample.

**Full check of the elements** – this type of verification is less probable within an audit, because of the effort the auditor has to make in order to achieve such an audit, from the point of view of the time it involves. However, there are exceptions too, for example when the collectivity subject to the audit has a low level. Another case is when the inherent risk and the control risk have high value, and the auditor cannot use additional procedures.

**Selection of certain elements** – if the auditor knows about the audited business, the client and the characteristics of the community that shall be tested, he may choose the testing according to this method. Thus, the auditor may choose

- elements with higher value or special characteristic values, respectively elements about which the auditor knows that errors have been found during the previous periods, which exceed the values accepted by the auditor, etc.;
- all the elements whose value exceeds a certain amount, respectively, when the materiality is established, the auditor determines a certain amount that he considers to be the reference amount. It will be different, according to the characteristics of each collectivity;
- elements that may supply the necessary information regarding the audit procedures;
- elements that lay at the foundation of the audit procedures that will be used for the testing of a certain collectivity.

**Selection of a sample** – the auditor may choose to use a sample, the method most often used within an audit process. If this method is used correctly, it supplies representative information about the subject proposed by the auditor. If, of various reasons, the auditor considers that this method is not enough, he will use additional audit procedures. The sample may be determined using the statistical method or the non-statistical method.

### 2.3. SAMPLING METHODS

We shall present the following methods as the methods for the selection of the sample elements:

1. *Use of a computerized program.* This program will generate random numbers, and the documents or transactions that will be selected by means of computer will be analysed in the audit process. If the auditor will think that a more thorough analysis of certain elements is needed, he will take the necessary steps to perform this analysis.

2. *Systematic selection.* This involves the selection of a numbering step. For example number 10. Out of the total of the sample elements, every 10<sup>th</sup> number will be selected in order to be subject to the audit process. In this kind of selection, each element has a chance to be selected.

3. *Multistadial selection* means the distribution of the audit elements in groups. The selection in groups means the selection of the groups of neighbouring elements out of the general collectivity. The majority of general collectivities are structured so that the elements in succession might have similar characteristics, however different from the characteristics of other elements of the general collectivity. Although in certain circumstances the examination of the group of elements might be an adequate audit procedure, if the auditor wants to draw well-grounded conclusions about the general collectivity based on the sample, this selection method of the sample elements is rarely adequate. Of these groups, the auditor will choose randomly the elements that he will submit to the audit procedure, so that each group has a chance to be selected and each member of the group has an equal chance to be selected within the group.

4. *The stratified random selection* means the selection of certain layers, and various elements are selected randomly within each layer. Each element of a layer has an equal chance to be selected.

5. *Non-systematic selection* means the selection of the sample without the application of the structured method. Although the structured method is not applied, the auditor will avoid the conscious non-objectivity or predictability and thus, he will assure that all the elements of the general collectivity shall have the chance to be selected.

### 3. THE SAMPLE FORMATION

#### 3.1. THE OBJECTIVES OF THE TESTING AND THE CHARACTERISTICS OF THE COLLECTIVITY

When a sample is formed, the auditor should take into consideration the objectives of the testing and the characteristics of the general collectivity out of which the sample shall be formed.

According to the objectives that shall be reached, the auditor decides the procedures and estimates the risks of error, so that he may establish what collectivity may be submitted to the sampling procedure and which collectivity shall be verified fully or randomly.

The error has a very important role in this issue. For example, if after the analysis of a collectivity, the auditor finds out that the existence of a significant error is certified at a high level, the auditor will verify the whole collectivity, so that when he presents his opinion, it has to be relevant.

The auditor has to take into considerations certain conditions when he chooses the general collectivity:

1. This should *correspond* to the objective of the sampling procedure. For example, if the objective of the auditor is to test the overvaluation of the debts, the general collectivity may be defined as the list of debt accounts. On the other side, when testing the undervaluation, the general collectivity includes not the list of the debt accounts but the further payments, the unpaid invoices of the suppliers, unverified entry documents or other general collectivities that offer proofs of audit referring to the undervaluation of the debts.

2. The general collectivity should be *complete*. For example, if the auditor wants to select the payment orders in the register, he will not be able to draw conclusions for all the orders of that period, until the auditor will be sure that the payment orders have been registered.

#### 3.2. THE VOLUME OF THE SAMPLE

As far as the volume of the sample is concerned, we have to take into consideration the risk that the auditor is willing to accept. The lower the level of the accepted risk decreases, the higher the volume of the sample increases. In establishing the volume of the sample, the auditor will have to make use of his professional reasoning, besides the external factors, as the level of trust of the auditor in the accounting system and in the internal system, the deviation rate from the control procedure established previously, the safety level established by the auditor, etc.

### 3.3. THE SELECTION OF THE SAMPLE ELEMENTS

When the sample is selected, the auditor should take into consideration that each element of the collectivity should have the chance to be selected. The purpose of this sample selection is that the auditor should be able to express reasonably his opinions about the whole collectivity, so that each element of a collectivity has equal importance. The elements of a sample maybe physical (accounting documents, as invoices, receipts, etc.) or monetary (value of the clients' balances, value of the suppliers' balances, etc.).

### 3.4. THE CHARACTER AND CAUSE OF ERRORS

After the performance of the audit procedures, the auditor will analyse the results of the sample, the character and cause of the errors discovered and he will analyse their influence on the result of the audit tests. Following the analysis, the auditor may found out that, the error emerges after an isolated event, and that this error is not characteristic for the collectivity under analysis. The auditor may find out that the error emerges as an error of a repeating event, and in this case he will try to discover the common element of this type of error (period, place of emergence, etc.) and he will extend the audit procedures on the collectivity elements that are placed in this type of error.

### 3.5. EVALUATION OF THE SAMPLING RESULT

If the extended average of the errors is placed in the interval that the auditor considers to be accepted, the results of the implementation of the audit procedure on the sample chosen and the need to obtain additional audit tests will be taken into consideration. If the error is close to the limit allowed by the auditor, he has to take into consideration that the application of the audit procedures on another sample may lead to an error that would exceed the allowed limit. Therefore, it is recommended that he take into consideration the application of additional audit procedures so that to decrease the risk on the audit results.

If the extrapolation of the errors leads to significant errors, the auditor has to consider them when he issues the audit report – either to modify the planned audit procedures, or to ask the management to study the errors in order to correct them.

## References

- [1] Consiliul pentru Standarde Internationale de Contabilitate, Standardele Internationale de Raportare Financiară (IFRSSs), incluzand Standardele Internationale de Contabilitate ( IASs) si interpretarile lor la 1 ianuarie 2007,Editia a 3-a, revizuita, Editura CECCAR, 2007
- [2] Arens, A., Loebbecke, J., Audit. O abordare integrată, Editura Arc, Chişinău, 2003
- [3] CAFR, Audit financiar 2000. Standarde. Codul privind conduita etică şi profesională, Editura Economică, Bucureşti, 2000
- [4] Eilifsen, A., Knechel, W. R., & Wallage, P., (2001), Use of strategic risk analysis in audit planning: A field study, Accounting Horizons
- [5] Isaic-Maniu, Al.; Mitruţ, C.; Voineagu, V. – “Statistică pentru managementul afacerilor”, Editura Economică, Bucureşti, 1999
- [6] IAASB (International Auditing and Assurance Standards Board), (2005), Handbook of international auditing, assurance and ethics pronouncements 2005 Edition
- [7] Knechel, W. R., (2007), The business risk audit: Origins, obstacles and opportunities, Accounting, Organizations and Society

