

ANALYTICAL PROCEDURE

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Introduction

Analytical procedures consist of the analysis of significant ratios and trends including the resulting investigation of fluctuations and relationships that are inconsistent with other relevant information or deviate from predictable amounts.

Analytical procedures entail the use of comparisons and relationships to determine whether account balances or other data appear reasonable. Such procedures allow the auditor to look at things in overview and answer the question: Do the numbers make sense?

The standard defines 'Analytical procedures' as the analysis of relationships between:

- (a) Items of financial data, or between items of financial and non-financial data, deriving from the same period; or
- (b) Comparable financial information deriving from different periods or different entries, to identify consistencies and predicted patterns or significant fluctuations and unexpected relationships, and the results of investigations thereof.

Analytical procedures are designed primarily to assist in planning the audit and as part of the evaluation of the financial statements. Analytical procedures are an important part of the audit process and consist of evaluations of financial information made by a study of plausible relationships among both financial and nonfinancial data. Analytical procedures range from simple comparisons to

the use of complex models involving many relationships and elements of data. A basic premise underlying the application of analytical procedures is that plausible relationships among data may reasonably be expected to exist and continue in the absence of known conditions to the contrary. Particular conditions that can cause variations in these relationships include, for example, specific unusual transactions or events, accounting changes, business changes, random fluctuations, or misstatements.

Nature and application of Analytical Procedures

Analytical procedures include the consideration of comparisons of the entity's financial information with, for example

- (a) Comparable information for prior periods;
- (b) Anticipated results of the entity, from budgets or forecasts;
- (c) Predictive estimates prepared by the auditors, such as an estimation of the depreciation charge for the year; and
- (d) Similar industry information, such as a comparison of the entity's ratio of sales to trade debtors with industry averages, or with the ratio relating to other entities of comparable size in the same industry.

Analytical procedures also include consideration of relationships:

- (a) Between elements of financial information that are expected to conform to a predicted pattern based on the entity's experience, such as the relationship of gross profit to sales; and
- (b) Between financial information and relevant non-financial information, such as the relationship of payroll costs to number of employees.

Various methods may be used in performing the analytical procedures. These range from simple comparisons to complex analyses using advanced statistical techniques. Analytical procedures may be applied to consolidated financial statements, financial statements of components (such as subsidiary undertakings, divisions or branches) and individual elements of financial information. The auditors' choice of procedures, methods and level of application is a matter of professional judgement.

Analytical procedures are used by auditors:

- (a) To assist in planning the nature, timing and extent of other audit procedures;
- (b) As substantive procedures when their use can be more effective or efficient than other procedures in reducing detection risk for specific financial statement assertions; and
- (c) As part of the overall review of the financial statements when finalising the audit.

“The auditor should apply analytical procedures at the planning and overall review stages of the audit.”² Analytical procedures may also be applied to substantive testing. In the planning stage, the purpose of analytical procedures is to highlight risk areas to narrow the focus of planning the nature, timing, and extent of auditing procedures. In the overall review stage, the objective of analytical procedures is to assess the conclusions reached and evaluate the overall financial statement presentation. It may be used to detect material misstatements that other tests can overlook, such as fraud or understatement errors. In the substantive testing stage of the audit, analytical procedures are used to see “the big picture”, i.e. obtain evidence to identify misstatements in account balances and thus to reduce the risk of misstatements.

Tools and techniques

The general analytical procedures are trend analysis, ratio analysis, statistical and data mining analysis, and reasonableness tests. Determining which type of analytical procedure is appropriate is a matter of professional judgment. A review of audit practice indicates that simple judgmental approaches (such as comparison and ratio analysis) are used more frequently than complex statistical approaches.

1. Trend Analysis

Trend analysis is the analysis of changes in an account balance or ratio over time. Trend analysis could compare last year’s account balance to the current unaudited balance or balances in many time periods. Trend analysis works best when the account or relationship is fairly predictable (e.g. rent expense in a stable environment). It is less effective when the audited entity has

experienced significant operating or accounting changes. The number of years used in the trend analysis is a function of the stability of operations. The more stable the operations over time, the more predictable the relations and the more appropriate the use of multiple time periods. Trend analysis at an aggregate level (e.g. on a consolidated basis) is relatively imprecise because a material misstatement is often small relative to the aggregate account balance. The most precise trend analysis would be on disaggregated data (e.g. by segment, product, or location, and monthly or quarterly rather than on an annual basis).

Ratio Analysis

Ratio analysis is the comparison of relationships between financial statement accounts, the comparison of an account with non-financial data, or the comparison of relationships between firms in an industry. Another example of ratio analysis (which is sometimes referred to as common size analysis) is to set all the account balances as either a percentage of total assets or revenue. Ratio analysis is most appropriate when the relationships between accounts is fairly predictable and stable (e.g. the relationship between sales and accounts receivable). Ratio analysis can be more effective than trend analysis because comparisons between the balance sheet and income statement can often reveal unusual fluctuations that an analysis of the individual accounts would not. Like trend analysis, ratio analysis at an aggregate level is relatively imprecise because a material misstatement is often small relative to the natural variations in the ratios.

Reasonableness Testing

Reasonableness testing is the analysis of account balances or changes in account balances within an accounting period in terms of their “reasonableness” in light of expected relationships between accounts. This involves the development of an expectation based on financial data, non-financial data, or both. For example, using the number of employees hired and terminated, the timing of pay changes, and the effect of vacation and sick days, the model could predict the change in payroll expense from the previous year to the current balance within a fairly narrow dollar range.

In contrast to both trend and ratio analyses (which implicitly assume stable relationships), reasonableness tests use information to develop an explicit prediction of the account balance. The auditor develops assumptions for each of the key factors (e.g. industry and economic factors) to estimate the account balance. Considering the number of units sold, the unit price by product line, different pricing structures, and an understanding of industry trends during the period could explicitly form a reasonableness test for sales. This is in contrast to an implicit trend expectation for sales based on last year's sales. The latter expectation is appropriate only if there were no other factors affecting sales during the current year, which is not the usual situation.

Use of analytical Procedures for substantive testing

The decision about whether to use analytical procedures as substantive procedures and the nature, timing and extent of their use is based on the auditors' judgement about the expected effectiveness and efficiency of the available procedures in reducing detection risk for specific financial statements assertions.

Auditors usually enquire of management as to the availability and reliability of information needed to apply analytical procedures and the results of any such procedures performed by the entity.

It may be efficient to use analytical data prepared by the entity, provided the auditors are satisfied that such data is properly prepared.

When intending to apply analytical procedures as substantive procedures, auditors consider a number of factors such as:

- (a) The plausibility and predictability of the relationships identified for comparison and evaluation. For example, there is a strong relationship between certain selling expenses and turnover in businesses where the sales force is paid by commission;
- (b) The objectives of the analytical procedures and the extent to which their results are reliable;
- (c) The degree to which information can be disaggregated, for example, analytical procedures may be more effective when applied to financial

information on individual sections of an operation or to financial statements of components of a diversified entity, than when applied to financial information relating to the entity as a whole;

(d) The availability of information, both financial (such as budgets or forecasts) and non-financial (such as the number of units produced or sold);

(e) The relevance of the information available, for example, whether budgets are established as results to be expected rather than as goals to be achieved;

(f) The comparability of the information available, for example, broad industry data may need to be supplemented to make it comparable with that of an entity that produces and sells specialised products; and

(g) The knowledge gained during the previous audits, together with the auditors' understanding of the effectiveness of the accounting and internal control systems and the types that in prior periods have given rise to accounting adjustments.

The reliability of the information used in analytical procedures is likely to be enhanced:

(a) If it comes from sources independent of, rather than internal to, the entity;

(b) If the information is produced internally, its reliability is enhanced if it is produced independently of the accounting system or there are adequate controls over its preparation; and

(c) If the necessity for the evidence on the reliability of such information depends on the results of other audit procedures and on the importance of the results of analytical procedures as a basis for the auditors' opinion.

The extent of reliance that auditors place in the results of analytical procedures when used as substantive procedures may also depend on the following factors:

(a) Other procedures directed towards the financial statement assertions. For example, other procedures auditors undertake in reviewing the collectibility of debtors, such as the review of subsequent cash receipts, may confirm or dispel questions arising from the application of analytical procedures to an aged profile of customers' accounts;

(b) The accuracy with which the expected results of analytical procedures can be predicted. For example, auditors normally expect greater consistency in comparing discretionary expenses, such as research or advertising; and

(c) The frequency with which a relationship is observed, for example, a pattern repeated monthly as opposed to annually.

The application of analytical procedures is based on the expectation that relationships between data exist and continue in the absence of known conditions to the contrary. The presence of these relationships provides audit evidence as to the financial statement assertions relating to the data produced by the accounting system. However, reliance on the results of analytical procedures depends on the auditors' assessments of the risk that the analytical procedures may identify relationships as expected whereas, in fact, a material misstatement exists

AUDIT SAMPLING

Contents:

- Concept and Definition
- Need of Sampling
- Sampling Technique
- Methods of Sampling
- Sampling Risk

SAMPLING

Concept and Definition: Audit sampling is the application of an audit procedure to less than 100 percent of the items within an account balance or class of transactions for the purpose of evaluating some characteristic of the balance or class. This section provides guidance for planning, performing, and evaluating audit samples. The auditor often is aware of account balances and transactions that may be more likely to contain misstatements. He considers this knowledge in planning his procedures, including audit sampling. The auditor usually will have no special knowledge about other account balances and transactions that, in his judgment, will need to be tested to full-fill his audit objectives.

“Audit sampling” (sampling) involves the application of audit procedures to less than 100% of items within an account balance or class of transactions such that all sampling units have a chance of selection. This will enable the auditor to obtain and evaluate audit evidence about some characteristic of the items selected in order to form or assist in forming a conclusion concerning the population from which the sample is drawn. Audit sampling can use either a statistical or a non-statistical approach.

Need or Reasons for Applying Sampling Technique

The auditor, in considering a particular population has to consider how to obtain assurance about it. Sampling may be the solution. A complete check of all the transactions and balances of a business is no longer required of an auditor. The reasons for this are as follows:

- i. Economic: The cost in terms of expensive audit resources would be prohibitive.
- ii. Time: The complete check would take so long that account would be ancient history before users saw them.
- iii. Practical: Users of accounts do not expect or require 100% accuracy. Materiality is very important in accounting as well as in auditing.
- iv. Psychological: A complete check would so bore the audit staff that their work would become ineffective and errors would be missed.
- v. Fruitfulness: A complete check would not add much to the worth of figures if, as would be normal, few errors were discovered. The emphasis in auditing should be on the completeness of record and the true and fair view.

Factors that may be taken into account in considering whether or not to sample include the following:

- i. Materiality: Some items of expenses may be so small that no conceivable error may affect the true and fair view of the accounts as a whole.
- ii. Number of items in the population: If the number of items in the population are few (e.g., land and buildings), a 100% check may be economical.
- iii. Reliability of other items of evidence: Analytical review (e.g., wages relate closely to number of employees, budgets, previous years etc.) or proof in total (VAT calculations). If other evidence is very strong, then a detailed check of a population may be unnecessary.
- iv. Cost and time: Cost and time considerations can be relevant in selecting between evidence seeking methods.
- v. A combination of evidence seeking methods is often the optimal solution.

Limitations of Application However, there are certain exceptions. In some cases, a 100% check is necessary and sampling is not advisable. Some of the exceptional areas, where application of sampling technique is to be avoided include the following: i. Unusual or exceptional items.

ii. Categories with special importance where materiality does not apply (for example, Director's remuneration).

iii. Categories which are few in numbers but of great importance (for example, land and buildings). iv. Any area where the auditor is put upon enquiry. v. High-risk areas.

But the auditors should carry out procedures designed to obtain sufficient appropriate audit evidence to determine with reasonable confidence whether the financial statements are free from material misstatement. Two words in the last sentence are relevant here—reasonable and material. It is not necessary that auditors should ensure that financial statements are absolutely 100% accurate. Sampling does not provide absolute proof of 100% accuracy but it can provide reasonable assurance that some elements of the financial statements are free from material misstatement

Sampling Technique:

Approaches to Sampling Technique There are two approaches to sampling in auditing. These are:

i. Judgemental sampling

ii. Statistical sampling

Judgemental Sampling

This means selecting a sample of appropriate size on the basis of the auditor's judgement. This approach of sampling is also called as 'seat of pants' approach.

This approach has some advantages, which include the following:

i. No special knowledge of statistics is required.

ii. The auditor can bring his judgement and expertise into play. Some auditors seem to have a sixth sense. iii. No time is spent on playing with mathematics.

All the audit time is spent on auditing. iv. The approach has been followed by the auditors for many years. It is well understood and refined by experience.

However, judgemental sampling approach is suffering from certain limitations. These limitations are as follows:

- i. It is unscientific.
- ii. There is no real logic to the selection of the sample or its size.
- iii. No quantitative results are obtained.
- iv. Personal bias in the selection of samples is unavoidable.
- v. It is wasteful; usually sample sizes are too large.

Statistical Sampling

Drawing inference about a large volume of data by an examination of sample is a highly developed part of the discipline of statistics. It seems only common sense for the auditor to draw upon this body of knowledge in his own work. In practice, a high level of mathematical competence is required if valid conclusions are to be drawn from sample evidence. However, most firms that use statistical sampling have drawn up complex plans that can be operated by staff without statistical training. These involve the use of tables, graphs or computer methods. The advantages of using statistical sampling are the following:

- i. It is scientific.
- ii. It is defensible.
- iii. It provides precise mathematical statements about probabilities of being correct.
- iv. It is efficient; overlarge sample sizes are not taken.
- v. It can be used by lower grade staff that would be unable to apply the judgement needed by judgement sampling.

There are some disadvantages:

- i. As a technique, it is not always fully understood so that false conclusions may be drawn from the results.
- ii. Time is spent playing with mathematics, which might better be spent on auditing.
- iii. Audit judgement takes second place to precise mathematics.

- iv. It is inflexible.
- v. Often several attributes of transactions or documents are tested at the same time. Statistics does not easily incorporate this.

Sampling Methods

There are several methods available to an auditor for selecting items. These include the following:

- i. *Simple random sampling*: In this method, all items in the population are given a number. Numbers are selected by a means that gives every number an equal chance of being selected. This is done by using random number tables or computer-generated random numbers.
- ii. *Systematic random sampling*: This method involves making a random start and then taking every nth item thereafter. This is a commonly use method, which saves the work of computing random numbers. However, the sample may not be representative as the population may have some serial properties.
- iii. *Stratified sampling*: In this method, the population is divided into sub-populations and is useful when parts of the population have higher than normal risk (for example, foreign customers, costly items). Usually, high-value items form a small part of the population and are 100% checked and the remainder is sampled.
- iv. *Cluster sampling*: This method is useful when data is maintained in clusters or groups as wage records are kept in weeks and sales invoices in months. The idea is to select a cluster randomly and then to examine all the items in the cluster chosen. The problem with this method is that this sample may not be representative.
- v. *Multi-stage sampling*: This method is appropriate when data is stored in two or more levels. For example stock in a retail chain of shops. The first step is to randomly select a sample of shops and the second stage is to randomly select stock items from the selected shops.
- vi. *Block sampling*: Under this method, one block of items are selected at random. For example, all sales invoices for the month of July are selected for checking. This common sampling method has none of the desired features and is not usually recommended.

vii. *Value-based sampling*: This method uses the currency unit value rather than the items as the sampling population. It is now very popular and also termed as monetary unit sampling.

viii. *Haphazard sampling*: It means simply choosing items subjectively but avoiding bias. This method is acceptable for non-statistical sampling, but is insufficiently rigorous for statistical sampling.

Having carried out, on each sample item, those audit procedures that are appropriate to the particular audit objective, the auditor should

- i. Analyse any errors detected in the sample;
- ii. Project the errors found in the sample to the population; and
- iii. Reassess the sampling risk

On the basis of the above evaluation of the sampling results, the auditor needs to consider whether errors in the population might exceed the tolerable limit and in that case the auditor has either to change the method of selecting the sample or the technique of auditing itself.

Sampling risk

The risk that the auditors' conclusion based on a sample might be different from the conclusion they would reach if they examined every item in the entire population.

Sampling risk is reduced by increasing the size of the sample. At the extreme, when an entire population is examined there is no sampling risk. But auditing large samples or the entire population is costly. A key element in efficient sampling is to balance the sampling risk against the cost of using larger samples.

“Sampling risk” arises from the possibility that the auditor's conclusion, based on a sample may be different from the conclusion reached if the entire population were subjected to the same audit procedure.

There are two types of sampling risk:

- i. The risk the auditor will conclude, in the case of a test of control, that control risk is lower than it actually is, or in the case of a substantive test, that a material error does not exist when in fact it does. This type of risk affects audit

effectiveness and is more likely to lead to an inappropriate audit opinion; and
ii. The risk the auditor will conclude, in the case of a test of control, that control risk is higher than it actually is, or in the case of a substantive test, that a material error exists when in fact it does not. This type of risk affects audit efficiency as it would usually lead to additional work to establish that initial conclusions were incorrect.

TEST CHECKING

Contents:

- Meaning
- Objectives
- Advantages and Disadvantages
- Auditing in depth
- Cut off Examination/ Checking

Meaning

The term 'test checking' stands for the method of auditing, where instead of a complete examination of all the transactions recorded in the books of accounts, only some of the transactions are selected and verified. The underlying intention is to test some of the transactions to form an opinion for the whole. According to Professor Meig, "test checking means to select and examine a representative sample from a large number of similar items". The justification of test checking lies on theory of probability which states, in effect that a sample selected from a series of items will tend to show the same characteristics present in the full series of items, which is commonly referred to as "population" or "universe".

Objectives

Objectives of Test Checking Accounts of large Organisations usually include an enormous number of transactions. But the auditor is not in a position to check each and every transaction within the limited time and due to the constraint of resources available to him. So, he has to depend on selective verification of the transactions. The selection of transactions will be made in such a way that the auditor will verify a small but representative number of transactions and he can draw conclusions about the transactions as a whole. So, the basic objective of test checking is to draw a valid conclusion by undertaking examination of some transactions from the large number of transactions and thereby save time and cost.

Advantages

- i. It is one of the best techniques of auditing through which cost of audit can be reduced.
- ii. It can ensure the speed of audit work.
- iii. It can easily locate the deficient areas and thus helps to come to the conclusion as to the acceptability of financial records.
- iv. It is a labour saving device.
- v. It acts as a guide to the auditor to arrive at a conclusion regarding the true and fair view of the state of affairs of the business.

Disadvantages

- i. It will prove inefficient where internal check and control system are not operating or found ineffective.
- ii. It is not suitable for small concerns.
- iii. It bounds to show incorrect result if the samples are not proper representative of the population.
- iv. It does not offer any consistency in selecting the percentage of check that will be adopted by all concerns.

AUDITING IN DEPTH

Auditing in depth is a technique that assists the auditor in conducting test checking and adoption of such a system becomes essential in large organisations, where detailed examination of all the records is not possible. It is a method of auditing under which a few selective transactions are subjected to a thorough scrutiny for arriving at the accuracy of the data.

This technique involves the selection of a sample of transactions from one area of accounting and tracing them from the beginning to the conclusion. This system is undertaken to examine the effectiveness of the internal control and

internal check system. In order to conduct the work of auditing in depth of a specific transaction, the auditor has to examine thoroughly the different stages of the transaction.

For example, in respect of goods purchased, the auditing in depth technique will be applied through the following stages:

- i. Examine the requisition note from the stores, ensuring that it has been signed by the appropriate official.
- ii. Examine the copy of the order placed by the purchasing department, ensuring that it was properly executed on the official form, complied with all the client's regulations and was authorised by the appropriate official.
- iii. Examine the delivery note from the supplier and compare it with the copy of the order.
- iv. Examine the goods inward note made out when the goods were received, noting if it has been properly signed, if it indicates that the correct goods have been received and if their quantity and condition have been checked.
- v. Check the entries in the store records.
- vi. Check in the accounts department that the invoice received from the supplier has been matched with the copy of the order and the copy of the goods received note before being processed, and that the calculations have been checked.
- vii. Check the appropriate entries in the accounting records, and
- viii. Compare the returned cheque with the invoice and supplier's statement, if any. From the above example, it can be seen that the auditor would trace the transaction right through the system. He would not merely satisfy himself that the entries in the records were correct, but would ensure that the appropriate internal controls relating to authorisation of transactions, the checking of one document against another and physical inspection of goods has been properly operated at the appropriate times. He would also ensure that a proper system was in force to claim credits in respect of short deliveries or deliveries of defective goods.

Where the examination of successive stages in the depth test produces satisfactory results, it is accepted practice that the auditor may progressively

reduce the number of items to be examined at subsequent stages. However, if the tests reveal an unacceptable number of errors, it will be necessary for the auditor to increase the number of items examined in order to discover whether the original sample was representative.

Advantages

- i. Precision in course of audit work can be achieved.
- ii. It guards against the fraudulent manipulation of accounts.
- iii. It does not offer any monotony in work to the auditor. Because the auditor will have to deal in all the time with new ideas and techniques.
- iv. It saves the cost of audit.
- v. The experience in auditing in depth can be widely used in preparing audit plan.

Disadvantages

- i. As the concept is linked with selective verification, its application may be fruitless if the selection of item is wrong.
- ii. Instead of saving cost and time, this technique entails loss of time and extra cost because of unskilled handling of audit affairs.
- iii. Proper selection of transactions for conducting auditing in depth is too much risky. If the items are not properly selected, it will not at all serve its purpose.
- iv. This technique cannot be applied to small organisations.
- v. It has been observed that the auditor relies too heavily upon intuition. Here, he uses no objective method of measuring the adequacy of samples.

CUT OFF EXAMINATION

Cut-off procedures are the procedures designed to ensure that at the year-end trading transactions are entered in the period to which they relate. In other words, the term 'Cut-off' refers to the procedure adopted to ensure the separation of transactions as at the end of one accounting year from those at

the commencement of the next following year, especially for items which may overlap, e.g., sales, purchase, stock etc.

Significance of Cut-Off in Auditing

The cut-off procedure is very significant in auditing to ensure that the revenue and expenditure of one year do not get recorded in the following year as that will distort the true and fair view of the accounts. The auditor must either establish that there are satisfactory internal controls in respect of cut-off and carry out compliance tests to ensure that these controls are functioning properly or carry out appropriate substantive tests. An obvious way in which accounts can be manipulated is for purchase invoices in respect of goods purchased shortly before the year-end to be held over and entered in the following accounting period, the goods will be included in stock, but the purchases will not be included in the accounts as either a liability or a charge. Similarly, the profits and assets can be inflated by including goods that have been sold, but not yet despatched, in both stock and sales. Tests should be carried out between the purchase invoices, goods inward records and store records on the one hand, and the sales invoices, goods outward records and store records on the other, to ensure that there is consistency in treatment. Cut-off manipulation was an important feature in which the auditors of Thomas Gerrard & Son Ltd. (1967) were held to have been negligent. The auditors' negligence arose primarily from their failure to follow up the alterations of the purchase invoices.