1.1 Audit Tests

An **audit strategy** involves the evaluation of internal controls and the performance of substantive tests. Substantive tests may be derived from test of details, analytical procedures or any combination of the two. Tests of details involve examining details of an account in an attempt to reconstruct and draw conclusions about the reported account balance, while analytical procedures involve drawing conclusions based on expected amounts calculated by the auditor. Generally, it is easy to obtain the necessary data to perform the analytical analysis regardless of the size or complexity of a company's accounting system. Auditors use five types of tests to determine whether the financial statements are fairly stated.

Understanding of Internal Control

An auditor should understand the internal control of his client before starting the audit job**.** The auditor must focus attention on both the design and the operation aspects of the internal control to the extent necessary to effectively plan the rest of the audit. Five types of audit procedures used to understand the internal control are given below:

Update and evaluate the auditor's previous experience with the entity
Make inquiries of client personnel
Read client's policy and systems manuals
Examine documents and records
Observe entity activities and operations

Tests of Controls

The major use of the auditor's understanding of internal control is to assess control risk for each transaction-related audit objectives. Examples are assessing the *accuracy objective* for sales transactions as low and the *existence objective* as moderate. Tests of controls are performed to determine the effectiveness of both the design and operations of specific internal controls. These tests include the following types of procedures:

Make inquire of appropriate client personnel
Examine documents, records, and reports
Observe control-related activities
Re-perform client procedures

The first two are the same as those used for understanding of internal control. Thus, performing tests of controls can be thought of as a continuation of the audit procedures used to obtain the understanding of internal control. But, the objectives are more specific and the tests are more extensive.

Substantive audit test is a procedure designed to test for birr misstatements directly affecting the correctness of financial statement balances. Monetary misstatements are clear indication of the misstatement of accounts. There are three types of substantive tests: *substantive tests of transactions*, *analytical procedures*, and *tests of details of balances.*

Substantive Tests of Transactions
The purpose of substantive tests of transaction is to determine whether all six transaction-related audit objectives have been satisfied for each class of transactions. The transaction-related audit objectives are: *existence, completeness, accuracy, classification, timing,* and *posting and summarization*.

Analytical Procedures (Tests)
Analytical procedures involve comparisons of recorded amounts to expectations developed by the auditor. They often involve the calculation of ratios by the auditor for comparison with previous year's ratios and other data.

Tests of Details of Balances
Focus on the ending general ledger balances for both balance sheet and income statement accounts. But, the primary emphasis in most tests of details of balances is on balance sheet. Examples: confirmation of customers accounts statements for account receivable, physical examination of inventory, examination of vendors' statements for account payables.
Typically, auditors use all five types of tests when performing an audit, but certain types are emphasized depending on the circumstances. Factors such as the availability of the seven types of evidence, the cost of each type of test, the effectiveness of internal controls and the existence of inherent risks all affect the mix of the types of tests auditors select. Each of the five tests involves only certain types of evidence (confirmation, documentation and so forth). The table below summarizes the relation between types of tests and types of evidence.

Relationship Between Types of Tests and Evidence							
Type of test	**Physical Examination**	**Confirmation**	**Documentation**	**Observation**	**Inquiries of the Client**	**Re-Performance**	**Analytical Procedures**
Understanding of Internal Control			√	√	√	√	
Tests of Control			√	√	√	√	
Substantive Tests of Transactions			√		√	√	
Analytical Procedures					√		√
Test of Detail of Balances	√	√	√		√	√	

1.2 Audit Sampling in General
An audit sampling is the process of selecting and examining a portion of a group of related items for the purpose of obtaining information or evaluation of some characteristics about the group as a whole. The group as a whole is called the population. In audit sampling, the population may be represented by an account balance or a class of transactions.

Audit sampling is based on the theory of probability, which say that a sample selected from a mass will by and large have the same characteristics as are presented in the mass. Whenever auditors select a sample from a population, the objective is to obtain a representative one. A representative sample is one in which the characteristics in the sample are the same as those of the population.

The need for audit sampling has been recognized by many professional bodies or accountants. The auditor must choose the particular item in the population to be included in the sample. Selection can be conducted based on two methods:

Statistical or probabilistic sample selection

Non statistical or judgmental sample selection

1. Statistical or Probabilistic Sample Selection: is the use of mathematical measurement technique to calculate formal statistical result. The primary benefit of statistical sampling is the quantification of sample risk. In statistical selection, every population item has equal chance of being selected. Techniques used in probabilistic sample selection are:

Simple Random Selection: In using this method of selection, every sample unit should have the same probability of being selected as every other sample unit in the population. In applying this method, every item or transaction under evaluation is listed in separate paper and assigned a number which has an association with specific item or document. Then, the auditor selects the sample randomly from the numbers. For example, if the item under evaluation is a pre-numbered sales invoice which has total of 1000 invoices, every invoice will be listed on a separate paper by assigning a number, then the auditor can pick 100 samples randomly from the list. The random selection can be made either using lottery method or random number table.

Systematic Sample Selection: In a systemic sample selection, first, the auditor determines the population and sample size to be taken for evaluation. Then, the auditor picks the sample systemically from the population. Assuming the above 1020 pre numbered sales invoices and 100 sample sizes; the auditor can calculate an interval to pick the sample item as follows:

$$\text{Interval} = \frac{\text{Population Size}}{\text{Sample Size}} = \frac{1000}{100} = 10$$

The auditor then select one invoice randomly from 1 to 10; assumes the numbers selected is 5, and then the remaining numbers are easily determined by adding the interval 10 on this number. There for the samples selected are sales invoices with numbers: 5.15, 25, 35, 45, 55, 65,75,85,95,105, ---, 985,995.

Stratified Sampling: When populations vary, it is advantageous to sample each subpopulation (stratum) independently. **Stratification** is the process

of dividing members of the population into homogeneous subgroups before sampling. The strata should be mutually exclusive: every element in the population must be assigned to only one stratum. The strata should also be collectively exhaustive: no population element can be excluded. Then *random* or *systematic sampling* is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error.

Probabilistic Proportion to Sample Size (PPS): In this case, the representative samples are usually selected based on the proportionate size of the amount on each sampling unit.

2. Non Statistical (Non Probabilistic) Sampling

In non-statistical sampling, the auditor does not quantify sampling risk. Instead conclusion is reached about population more on judgmental basis. There are three common approaches to selecting non probabilistic samples from accounting population.

a) Direct Method: is the use of professional judgment in selecting sample items for test of transaction. When sample size is small, a random sample is often unlikely to provide a representative sample. Therefore, it is better to use professional judgment to select the sample items.

b) Block Sampling: is the selection of several items in sequence. Example, the selection of a sequence of 100 sales transactions from the sales journal for the third week of March is a block sampling.

c) Haphazard Sampling : When the auditor goes through a population and selects items for the sample without regard to their size, sources or other distinguishing characteristics, the auditors is attempting to select without biases. This is called haphazard selection.

1.3 Audit Sampling for Test of Control and Substantive Test of Transaction

1.3.1 Application of Non Statistical Audit Sampling Methods

Audit sampling is applied to tests of control and substantive tests of transactions through a set of 14 well defined steps. The steps are divided in to three sections: *Plan the sample, select the sample and perform the audit procedures* and *evaluate the results*. It is important to follow these steps carefully as a means of ensuring that both the auditing and the sampling aspects of the process are properly applied.

I. Plan the Samples

1. State the Objective of the Audit Test: The overall objectives of the test must be stated in terms of the transaction cycle being tested. Typically, the overall objectives of tests of controls and substantive tests of transactions are to test the application of controls and to determine whether the transactions contain monetary misstatements.

2. Decide Whether Audit Sampling Applies: Audit sampling applies whenever the auditor plans to reach conclusion about a population based on a sample. The auditor should examine the audit program and decide those

audit procedures for which audit sampling applies. Assume the following partial audit program:

Review sales transactions for large and unusual amounts(Analytical procedure)

Observe whether the duties of the accounts receivables clerk are separate from handling cash(Test of control)

Examine sample of credit approval sales invoice

Select a sample of shipping documents and trace each to related duplicate sales invoice

Audit sampling is inappropriate for the first two procedures in this audit program. The first is an analytical procedure for which sampling is inappropriate. The second is an observation procedure for which no documentation exists to perform audit sampling. Audit sampling can be used for the remaining two procedures.

3. Define Attributes and Exception Conditions: When audit sampling is used, the auditor must carefully define the characteristics (attributes) being tested and the exception conditions. Unless a precise statement of what constitutes an attributes is made in advance, the staff person who performs the audit procedures will have no guideline for identifying exceptions. Attributes of interest and exception conditions come directly from the audit procedures for which the auditor has decided to use audit sampling. The table below shows three attributes of interest and exception conditions.

Attributes	Exception conditions
The duplicates sales invoice is approved for credit	*Lack of initials(original) indicating credit approval*
A copy of the shipping document is attached to the duplicate sales invoice	*Shipping document is not attached to duplicate sales invoice*
The quantity on the sales invoice is the same as on the shipping document	*Quantity on the shipping document differs from that on the duplicate sales invoice*

4. Define the Population: The population represents the body of data about which the auditor wishes to generalize. The auditor can define the population to include whatever data are desired, but he or she must sample from the entire population as it has been defined. The auditor must carefully define the population in advance consistent with the objective of the audit test.

5. Define the Sampling Unit: The major consideration in defining the sampling unit is to make it consistent with the objective of the audit test. Thus, the definition of the population and the planned audit procedures usually dictate the appropriate sampling unit. For example, if the auditor wants to determine how often the client fails to fill customers' order, the sampling unit must be defined as the customers' order.

6. Specify the Tolerable Exception Rate (TER): Tolerable exception rate (TER): is the exception rate that the auditor will permit in the population and still be willing to use the assessed control risk or the amount of misstatement in the transactions established during planning. For example,

assume that the auditor decided TER for an attribute is 6%, which means the auditor has decided that even if 6% of the duplicate sales invoices are not approved for credit, the credit approval control is still effective in terms of the assessed control risk included in the audit plane. TER is the result of an auditor's judgment and has a significance impact on sample size. A large sample size is needed for a low TER than for a high TER.

7. Specify Acceptable Risk of Assessing Control Risk too Low: Acceptable risk of assessing control risk (ARACR) is the risk that the auditor is willing to take of accepting a control as effective when the true population exception rate is greater than the TER. ARACR is the auditor's measures of sampling risk. To illustrate, assume that TER is 6%, ARACR is 8% and the true population exception rate is 8%. The control in this case is not acceptable because, the true exception rate of 8% exceeds TER. The auditor off course doesn't know the true population exception rate. The ARACR of 8% means that the auditor is willing to take 8% risks of concluding that the control is effective after all testing is completed, even when it is ineffective. If the auditor finds the control effective, in this illustration, he or she will have overlain on the system of internal control. For non statistical sampling, it is common for auditors to use ARACR of high, medium or low instead of percentage. A low ARACR implies that the tests of controls are important and would correspond to a low assessed control risk and reduced substitutive test of detail balance.

8. Estimate the Population Exception Rate: An advance estimate of the population exception rate should be made to plan the appropriate sample size. If the estimated population exception rate (EPER) is low, a relatively small sample size will satisfy the auditor's tolerable exception rate. This is because a less precise estimate is required. In other words, to be more precise, estimates of the population exception rate must be based on more data, that is, a larger sample.

9. Determine the Initial Sample Size: Four factors determine the initial sample size for audit sampling: Population size, TER, ARACR and EPER. Population size is not nearly as significant a factor as the others and typically can be ignored. The auditor will decide the sample size by considering the above factors and his/her own judgment and experience. Sensitivity of sample size to change in the factors is summarized in the table below.

Types of Change	**Effect on Initial Sample Size**
Increase acceptable risk of assessing control risk too low(ARACR)	*Decrease*
Increase tolerable exception rate(TER)	*Decrease*
Increase estimated population exception rate (PER)	*Increase*
Increase population size	*Increase (Minor effect)*

II. Select the Sample and Perform the Audit Procedures

10. Select the Sample: After the auditor has determined the initial sample size for the audit sampling application, he or she must choose the items in the population in the sample. The auditor can use one of the sample selection methods discussed above. To minimize the possibility of the client altering the sample items, the auditor should not inform the client too far in advance of the sample items selected. The auditor should also control the sample after the client provides the documents

11. Perform the Audit Procedures: The auditor performs the audit procedures by examining each item in the sample to determine whether it is consistent with the definition of the attributes and maintain a record of all the exceptions found. When audit procedures have been completed for a sampling application, there will be a sample size and a number of exceptions for each attributes. The sample exception rate (SER) can be easily calculated from the actual sample results, SER equals the actual number of exception divided by the actual sample size. Usually the sample exception rate (SER) is different from the population exception rate

III. Evaluate the Results

12. Generalize from the Sample to the Population: In order to generalize from the sample to the population, subtract the sample exception rate from the tolerable exception rate, which is calculated sampling error (TER – SER = calculated sampling error), and evaluate whether calculated sampling error is sufficiently large to indicate the true population exception rate is acceptable. For example, if an auditor takes a sample of 100 items for an attribute and finds no exception (SER=0) and TER is 5%, calculated sampling error is 5% (TER of 5% -SER of 0 = 5%). On the other hand, if there had been four exceptions, calculated sampling error would have been 1% (TER of 5% - SER of 4%). It is much more likely that the true population exception rate is less than or equal to the tolerable exception rate in the first case than in the second one. Therefore, most auditors would probably find the population acceptable based on the first sample result and not acceptable based on the second.

13. Analyze Exceptions: In addition to determining the SER for each attribute and evaluating whether the true but unknown exception rate is likely to exceed the tolerable exception rate, it is necessary to analyze individual exceptions to determine the breakdown in the internal controls that caused them. Exceptions could be caused by carelessness of employees, misunderstood instructions, and intentional failure to perform procedures or many other factors. The nature of an exception and its causes has a significance effect on the qualitative evaluation of the system. For example, if all the exception in the tests of internal verification of sales invoices occurred while the person normally responsible for performing the test was on vacation, this would affect the auditor's evaluation of the internal controls and the subsequent investigation.

14. Decide the Acceptability of the Population: It was shown under generalizing from the sample to the population that most auditors subtract SER from TER when they use non statistical sampling and evaluate whether

the difference, which is calculated sampling error, is sufficiently large. If the auditor concludes that the difference is sufficiently large, the control being tested can be used to reduce assessed control risk as planned, provided a careful analysis of the cause of exception does not indicate the possibility of other significant problems with internal controls. When the auditor concludes that TER-SER is too small to conclude that the population is acceptable, the auditor must take specific action. Four course of action can be followed.

Revise TER or ARACR
Expand the sample size
Revise assessed control risk
Communicate with the audit committee or management

1.4 Audit Sampling for Test of Detail Balances

1.4.1Application of Non Statistical Sampling Methods

There are 14 steps required in audit sampling for tests of details of balances. These steps parallel the 14 steps used for sampling for tests of controls and substantive tests of transactions. There are a few differences because of the difference in objectives of the tests. The following table compares and contrasts the 14 steps for test of control and transaction and test of detail balances.

Audit Sampling for Test of Detail Balance	**Audit Sampling for Test of Control and Substantive Test of Transaction**
A. Plan the Sample	**A. Plan the Sample**
1. State the objective of the audit test	*1. State the objective of the audit test*
2. Decide e whether audit sampling applies	*2. Decide e whether audit sampling applies*
3. Define misstatement conditions	*3. Define attributes and exception conditions*
4. Define the population	*4. Define the population*
5. Define the sampling unit	*5. Define the sampling unit*
6. Specify tolerable misstatement	*6. Specify the tolerable exception*
7. Specify acceptable risk of incorrect acceptance	*7. Specify acceptable risk of assessing control risk too low*
8. Estimate misstatement in the population	*8. Estimate population exception rate*
9. Determine the initial sample size	*9. Determine the initial sample size*
B. Select Sample and Perform Audit Procedures	**B. Select Sample and Perform Audit Procedures**
10. Select the samples	*10. Select the samples*
11. Perform the audit procedures	*11. Perform the audit procedures*

C. Evaluate the Results	**C. Evaluate the Results**
12. Generalize from the sample to the population	*12. Generalize from the sample to the population*
13. Analyze the misstatements	*13. Analyze the exceptions*
14. Decide the acceptability of the population	*14. Decide the acceptability of the population*

1.5 Sampling and Non Sampling Errors

Two things cause a sample result to be non-representative:
Sampling error
Non sampling error

Sampling error (sampling risk): is an inherent part of sampling that result from testing less than the entire population. If there is a sampling, since the auditor is not conducting 100% audit, there is always a chance that the sample is not representative. The error arising from this situation is called sampling risk. There are two ways to reduce sampling risk:
Increase the sample size
Use appropriate method of selecting sample items from the population.
Non sampling error (non sampling risk): occurs when audit tests do not uncover existing exception in the sample. The two causes of non sampling error.
The auditor's failure to recognize exception. This may occur because of exhaustion, boredom or lack of understanding of what to look for.
In appropriate or ineffective audit procedures.

Careful design of audit procedure and proper supervision and instruction are ways to eliminate non sampling risk