

# Course: Financial Audit

Lecture 9: Analytical Procedures

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# Overview of Lecture 8

# Analytical Procedures

- Analytical procedures are essential tools in auditing, allowing auditors to assess whether financial and non-financial data align in a logical and expected manner.
- By examining trends, ratios, and patterns within the data, auditors can evaluate if account balances or other figures appear reasonable in light of the entity's historical performance, industry norms, and projections.
- These procedures are designed to capture inconsistencies, outliers, or abnormal relationships that might indicate errors, unusual transactions, or potential fraud.

# Analytical Procedures

- The underlying principle of analytical procedures is grounded in the belief that certain relationships between financial data are stable and predictable over time unless impacted by major changes.
- This consistency provides a baseline against which auditors can compare actual figures to spot deviations.
- If a company's gross profit margin suddenly shifts without a clear operational change, this may signal potential issues like inventory shrinkage, altered pricing, or even improper accounting.

# Analytical Procedures

- Analytical procedures are instrumental in identifying expected patterns and connections within financial information.
- These patterns could include specific ratios, trends in revenue growth, or other key metrics like gross margin, which reflect the relationship between revenue and cost of goods sold.
- Non-financial information can also be valuable; for example, the relationship between payroll costs and headcount helps auditors determine if wage expenses align with workforce changes.

# Analytical Procedures

- Several types of analytical procedures enhance the audit process:
  - Trend analysis
  - Ratio analysis
  - Reasonableness testing
  - Data mining

# Analytical Procedures

- Application of analytical procedures during various audit stages allows auditors to identify risk areas and refine their approach:
  - During audit planning, analytical procedures help narrow down high-risk areas, guiding where to focus audit efforts based on identified risks.
  - In the review phase, analytical procedures help auditors validate overall conclusions and ensure financial statements align with the entity's financial condition.
  - For substantive testing, analytical procedures allow auditors to "zoom out" and detect broader misstatements or irregularities in accounts, reducing the risk of oversight.

# CAATs

- Computer-Assisted Audit Techniques (CAATs) have revolutionized auditing by providing auditors with the capacity to perform extensive testing on electronic data. By using CAATs, auditors can sample from entire populations of transactions, rather than taking traditional samples, significantly increasing testing precision.
- CAATs enable auditors to conduct multiple tasks, such as:
  - Selecting samples from data files,
  - Sorting transactions based on defined characteristics,
  - Conducting data analysis using statistical methods, and
  - Identifying anomalies and exceptions.
  - Generalized Audit Software (GAS).

# Analytical Procedures

- When analytical procedures highlight significant deviations or unexpected patterns, auditors are required to probe deeper and obtain corroborative evidence to explain the findings.
- Auditors then seek additional corroborative evidence to substantiate these explanations, which may involve reconciling financial data, reviewing supporting documents, or conducting further substantive testing.

# Analytical Procedures

- The practice of analytical review involves a series of structured stages, combining planning, execution, and evaluation of analytical procedures.
- From a theoretical perspective, the review process includes four key steps:
  1. Mental representation
  2. Hypothesis generation
  3. Information search
  4. Hypothesis evaluation

# Analytical Procedures

- Practically, auditors apply these steps in real-time, examining and validating causes for detected anomalies, then collecting and reviewing additional evidence until they arrive at a plausible explanation. This systematic approach is crucial to ensure objectivity and rigor in evaluating unexpected findings.

# Analytical Procedures

- The practitioner approach organizes the analytical review process into a structured, four-phase framework. This framework enables auditors to systematically assess financial data, recognize deviations from expected results, and investigate potential issues.
- This commonly used four-phase approach helps ensure the accuracy and reliability of the audit findings, creating a foundation for comprehensive analysis:
  - Phase One: Formulating Expectations
  - Phase Two: Comparing Expected Values to Recorded Values
  - Phase Three: Investigating Variances
  - Phase Four: Evaluating Impact on Financial Statements

# Phase One

- The process of setting expectations relies on the auditor's expertise, historical data, industry knowledge, and various quantitative and qualitative indicators.
- Expectations help reveal potential misstatements and ensure that financial accounts reflect accurate data. Auditors refine these expectations using a variety of data, such as industry statistics, economic trends, and internal company data, like budgets and non-financial metrics.
- This phase emphasizes the need for well-rounded expectations, as they increase the likelihood of detecting anomalies accurately.

# Phase Two

- During the identification phase, auditors apply their materiality threshold, a critical benchmark that distinguishes minor discrepancies from potentially significant misstatements.
- Competence in identifying error patterns and understanding their possible causes is essential here, as it allows auditors to identify whether discrepancies indicate errors or signal necessary adjustments. When using substantive testing, the auditor compares the account's book value against expectations to determine if the variance requires further action or adjustments.
- This step is vital to ensuring the audit remains focused on material issues, optimizing both the efficiency and effectiveness of the audit.

# Phase Three

- This phase involves gathering and evaluating potential explanations for any significant differences between expected and actual values.
- Greater precision in the expectation setting leads to an increased likelihood that variances result from misstatements, while lower precision may indicate fluctuations stemming from account-specific factors.

# Phase Four

- In this phase, auditors assess how unresolved variances affect the overall financial statement integrity. Although pinpointing precise causes may not always be feasible, auditors quantify the portion of unexplained variances that can be supported with reasonable assumptions.
- Minor unexplained differences may not lead to further adjustments, while significant unexplained variances might trigger additional testing or adjustments to prevent material misstatements in the final report.

# Analytical Procedures

- Reliable expectations are built upon logical, plausible relationships grounded in a solid understanding of the client's business and industry.
- Auditors use several comparative sources, such as prior period data, expected outcomes (budgets or forecasts), industry averages, and even non-financial indicators, to determine if current results are reasonable.

# Analytical Procedures

- By analyzing account balances over multiple periods, auditors can pinpoint accounts that show significant growth, reduction, or variation, all of which may require further investigation.
- Comparing budgeted and actual figures allows auditors to assess the accuracy of management's forecasts, revealing areas where significant misstatements may occur.

# Analytical Procedures

- The accuracy of an auditor's expectations varies according to the sources used. Recent period data, or information from stores in the same chain, yields more accurate benchmarks than industry-wide statistics or older reports.
- This level of precision is particularly valuable when analytical procedures serve as substantive tests rather than preliminary planning tools. Higher data precision enables auditors to detect inconsistencies with greater confidence, ensuring that their expectations support the audit's substantive goals.

# Analytical Procedures

- The reliability of analytical procedures is influenced by account types and data quality. Accounts with subjective estimates, like allowances for doubtful accounts, are more susceptible to errors compared to those reflecting transaction volumes, such as revenue.
- The predictability of an account also varies, with higher transaction volumes, yielding greater reliability than accounts with fewer entries. Fixed expenses are usually more consistent and predictable than variable costs, offering a stable baseline for comparison.

# Analytical Procedures

- Greater data detail enhances the accuracy of expectations, enabling auditors to make more precise comparisons.
- Segment or division-level data adds further granularity, helping auditors spot trends that consolidated figures might obscure. Research supports that more detailed monthly or product line data improves attention-directing capabilities in analytical procedures, helping to pinpoint high-risk areas with accuracy.

# Analytical Procedures

- The reliability of data is directly tied to the company's internal control strength, data objectivity, and prior audit exposure. Robust internal controls support trustworthy financial reporting, increasing data reliability and precision in expectation-setting.
- Moreover, independent data, such as occupancy rates or branch-level data, adds objectivity, making it easier to verify and rely on these metrics in audit procedures. Using audited data also boosts confidence in the figures, reducing the likelihood of material misstatements and enhancing the audit's overall quality.

# Analytical Procedures

- The primary analytical procedures include trend analysis, ratio analysis, statistical methods, data mining, and reasonableness tests. The selection of a suitable analytical procedure is based on professional judgment, as each audit scenario requires a tailored approach.
- Analytical procedures are frequently performed with the assistance of computer-aided audit tools (CAATs). This section focuses on trend analysis, ratio analysis, and reasonableness testing, while statistical and data mining methods are detailed further in the discussion on CAATs.

# Trend Analysis

- This method examines changes in specific account balances or financial ratios across multiple time periods, revealing patterns or deviations that may signify financial issues.
- Trend analysis is especially effective when working with stable, predictable accounts, such as fixed expenses like rent in a consistent environment. However, its efficacy diminishes if the business has recently undergone major operational or accounting shifts.
- Trend analysis at an aggregated level, such as for consolidated data, may lack precision because even significant misstatements may appear small relative to the total balance.

# Ratio Analysis

- This technique involves examining the relationships between different accounts or between financial and non-financial data.
- Ratio analysis can also take the form of common-size analysis, where account balances are expressed as percentages of total assets or revenue, offering a consistent basis for comparison. Ratio analysis works best when account relationships are relatively stable, as seen with metrics like sales versus accounts receivable.

# Ratio Analysis

- Five Types of Ratio Analysis:
  1. Comparison with Industry Data
  2. Historical Comparisons
  3. Client-Expected Ratios
  4. Auditor-Expected Ratios
  5. Ratios Using Non-Financial Data

# Reasonable Testing

- Reasonableness testing evaluates whether account balances or changes within an accounting period align with expected values, given established relationships. This process involves developing specific expectations based on both financial and non-financial data.
- Unlike trend and ratio analyses, which assume relatively stable relationships, reasonableness testing explicitly predicts account balances by integrating assumptions based on industry and economic factors.

# Analytical Procedures

- Each analytical method has unique attributes regarding predictive factors, the use of external data, and statistical rigor.
- Trend analysis typically relies on a single data point, like past account balances, and lacks the flexibility to incorporate external operational data. Ratio analysis, however, utilizes multiple related variables, allowing for greater precision.
- Reasonableness testing and regression analysis go further by incorporating numerous relevant financial and non-financial variables, enhancing expectation accuracy.
- Additionally, they can directly leverage external data to strengthen predictions, offering a higher degree of statistical accuracy, especially when complemented by data mining techniques.

# Key Ratios

- At the outset of an audit, auditors routinely compute standard ratios to assess areas that may indicate significant risks, focusing on liquidity, solvency, profitability, and activity metrics. These ratios address critical concerns, such as:
  1. Liquidity
  2. Solvency
  3. Profitability
  4. Activity

# Going Concern

- Auditors need to evaluate if the entity may face liquidity challenges, potentially impacting its ability to continue as a going concern.
- International Standard on Auditing (ISA) 570 advises auditors to scrutinize the validity of the going concern assumption underpinning the financial statements, especially if analytical procedures suggest conditions that could jeopardize ongoing operations.
- Applications of Analytical Procedures:
  - Planning Phase
  - Substantive Testing Phase
  - Review Phase

# Analytical Procedures

- The effectiveness of analytical procedures often depends on the accuracy of underlying data, which is itself a product of the client's internal control environment.
- When control systems governing the preparation of data are robust, auditors can rely on analytical results with greater confidence.
- Testing non-financial controls alongside accounting controls can provide added assurance.

# Analytical Procedures

- Benefits of using analytical procedures over detailed testing include leveraging the auditor's understanding of the client's business gathered during initial planning stages.
- Key business factors are often reflected in financial data, allowing auditors to hone in on specific elements that influence account balances. Analytical approaches can be efficient, especially for spotting understatements.

# Analytical Procedures

- When designing substantive analytical procedures, several considerations guide the audit plan, such as:
  1. The objectives of analytical procedures and their reliability,
  2. Characteristics of the business and the potential to analyze data at granular levels,
  3. Availability and reliability of both financial and non-financial information,
  4. Sources of data—external sources generally offer greater reliability than internal records,
  5. Comparability of available information, and
  6. Past audit experience, which informs expectations.

# Analytical Procedures

- Challenges of substantive analytical procedures include potential time investments in developing reliable expectations and ensuring data is detailed enough for analysis. They may not always be as effective as testing individual account balances.
- When analytical procedures are employed as substantive tests, auditors need robust evidence to validate explanations for any significant deviations observed. For example, recalculating invoice amounts by interviewing sales staff or other relevant personnel provides audit evidence of a quality comparable to tests of details.

# Analytical Procedures

- Methods for corroborating explanations include:
  1. Inquiring with external parties like banks, suppliers, and customers,
  2. Seeking insights from independent personnel within the organization outside the accounting department,
  3. Using evidence from other audit procedures, and
  4. Examining supporting documentation, such as contracts or delivery records, to substantiate claims.

# Analytical Procedures

- To identify unusual or fraudulent payments, auditors can employ CAATs (Computer-Assisted Audit Techniques) to categorize payments by size, flagging large transactions for further examination. By sorting payments by purchase type, auditors can contextualize expenditures within typical costs for similar transactions.
- Historical revenue data can be scrutinized over several years to highlight unexpected trends, while analyzing sales data by salesperson or customer can expose atypical patterns.

# Analytical Procedures

- In cases where payroll fraud is suspected, auditors apply substantive tests to detect issues like "ghost employees" or inflated overtime charges. Techniques such as duplicate and validity tests, exception testing, and recalculations help uncover irregularities.
- CAATs can verify employee, check that payroll entries align with job roles and salary bands, and ensure tax withholdings are appropriate. Auditors can even identify "ghost employees" by looking for those without typical deductions or benefits.
- CAATs offer extended testing capabilities for electronic records, enabling auditors to sample transactions from critical files, identify patterns, or examine an entire dataset instead of a limited sample.

# Analytical Procedures

- Regression analysis is often applied in complex audit settings, where statistical models calculate financial expectations with measurable risk and precision levels.
- This method's precision allows auditors to set explicit expectations with high statistical accuracy, accommodating factors like operational shifts, product changes, or economic fluctuations.

# GAS

- Using Generalized Audit Software (GAS), auditors have access to various computer-assisted techniques for analytical and statistical procedures in a unified tool.
- File interrogation in GAS includes various tasks such as:
  1. Converting client data into a standardized format,
  2. Analyzing datasets to spot trends,
  3. Comparing data across sources,
  4. Confirming calculation accuracy,
  5. Applying statistical sampling, and
  6. Identifying gaps or duplications in records.

# GAS

- When working with multiple files containing similar data, GAS facilitates cross-file comparisons. For instance, auditors may compare:
  1. Changes in accounts receivable across dates with sales and cash receipts,
  2. Payroll records against employee data,
  3. Current inventory lists with prior data to identify slow-moving items, or
  4. Investment portfolios recorded internally with those held by custodians.

# Data Mining

- Data mining is a powerful suite of methodologies and tools that leverage computer-assisted techniques to analyze vast amounts of data. By employing sophisticated statistical methods and artificial intelligence (AI), it aims to discover hidden patterns or insights that are not immediately apparent.
- This process is often encapsulated under the term "knowledge discovery in databases" (KDD). The versatility of data mining means it can handle various forms of data, including numerical figures, textual information, images, and audio files.

# Data Mining

- For auditors, data mining serves two primary functions: verification and discovery.
  - Verification
  - Discovery
- In contrast, data mining offers a more automated analysis of data, albeit requiring a higher degree of technical skill and understanding of statistical principles. As the auditing profession continues to evolve, the introduction of specialized data mining tools is expected to complement traditional audit methods, potentially replacing specific expert tasks and enhancing overall efficiency.

# Data Mining

- Comprehensive Applications: Data mining techniques are relevant throughout the audit process, but they hold particular value in analytical procedures. These techniques include:
  - Data Description
  - Dependency Analysis
  - Classification and Prediction: Creating models to categorize data into discrete classes.
  - Clustering
  - Outlier Detection
  - Evolution Analysis

# Data Mining

- **Dependency Analysis:** This technique focuses on identifying significant relationships among numerous variables. It helps auditors understand how different factors interrelate, which can be critical for risk assessment.
- **Classification:** In classification, the goal is to develop models, or classifiers, that categorize records into predefined classes. This process can assist auditors in quickly identifying transactions that meet certain criteria, streamlining the review process.

# Data Mining

- Data Characterization: Summarizes general data features, which can be crucial for understanding overall trends.
- Data Discrimination: Compares characteristics between different groups to highlight differences that may warrant further investigation.

# Data Mining

- **Evolution Analysis:** This technique examines how datasets change over time. It helps auditors recognize patterns in financial data and detect any significant deviations that could indicate misstatements or fraud.
- **Cluster Analysis:** Cluster analysis is a vital tool for segmenting data into groups with similar traits.
- **Outlier Analysis:** This focuses on identifying data points that deviate significantly from the norm.

# Data Mining

- Practical Use of Clustering:
  - Repeated Small Transactions
  - Unusual Variances in Sales
  - Variability in Expenses
  - Identification of Related Transactions
- Three common data mining algorithms:
  - Decision trees
  - Apriori algorithm
  - Neural networks

# Analytical Procedures

- When auditors observe significant variances or relationships during analytical procedures that contradict expectations, it prompts a detailed investigation. Auditors must gather sufficient evidence and explanations for these discrepancies to determine their cause.
- There are generally two categories of explanations for substantial discrepancies:
  - Genuine Business Reasons
  - Potential Misstatements

# Unusual Variances

- To address unusual fluctuations, auditors typically start by questioning management for their insights into the causes of these variances.
- After gathering management's explanations, auditors must corroborate these responses with their own knowledge of the business and other evidence collected during the audit.
- If management's explanations are insufficient or unconvincing, auditors need to aggregate any uncorrected misstatements identified during the audit.
- Finally, auditors assess the materiality of the identified discrepancies.

# Conclusion & Closing

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# Reference (reading material):

- Principles of Auditing: an Introduction to International Standards on Auditing, 3rd Edition, Hayes, Wallage, and Gortemaker, Pearson Education Limited, 2014