

The background is a blue-tinted image featuring a pair of glasses, a pen, and a keyboard. The glasses are positioned at the top, the pen is in the middle, and the keyboard is at the bottom right. The overall aesthetic is professional and tech-oriented.

Deloitte.

DATA ANALYSIS

*LEVERAGING CAATS INTO YOUR
AUDITS*

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Session Objective

1. Provide an overview of CAATs.
2. Illustrate the ability of CAATs to improve the efficiency and effectiveness of audits.
3. Offer practical take-aways.

Agenda

The History

A Definition

Myths

Benefits

Applications

Potential Problems

Case Studies

Detecting Fraud




Tools

Tips




A History

COMPUTER ASSISTED AUDIT TECHNIQUES



1970's...

-  Audit around the computer.
-  Main audit tools consist of questionnaires, control flowcharts, application control matrices.
-  Audit software used primarily to verify controls.

1980's...

-  Start automating manual tasks.
-  PC's and some basic data analysis software tools become available.
-  Recognized tool for detecting financial errors.

1990's...

-  Analytical tools become more powerful and widely used.
-  By mid-90's use of CAATs becomes standard practice.

Today...

- 📄 Highly interactive tools & techniques support flexibility and innovation.
- 📄 Auditor is able to apply thinking and reasoning, easily adjust initial approach.
- 📄 Techniques and types of data interrogations in modern audit software are almost unlimited.

A Definition

COMPUTER ASSISTED AUDIT TECHNIQUES

A Definition

*“Computer based **tools** & **techniques** which permit auditors to increase their personal productivity, as well as that of their audit function.”*

- CAATs & Other BEASTS for Auditors
David G. Coderre

A Definition






Systems-Based

- ⊖ Test application controls

Data-Based

- ⊖ Verify accuracy, completeness, integrity, reasonableness & timeliness of data.
- ⊖ Determine risk and materiality.
- ⊖ Identify focus.
- ⊖ Validate and assess the operational effectiveness of internal controls.

Myths

-  Too expensive.
-  Highly technical, complex.
-  Only for use by IS auditors.
-  Hands-on approach to auditing.
-  Compromised systems and data.

Benefits








COMPUTER ASSISTED AUDIT TECHNIQUES

Benefits

*"The use of Computer Assisted Audit Techniques (CAATs) provide an effective means to **increase our audit coverage while decreasing the risks and costs** of auditing certain financial services systems and/or accounts."*

www.acl.com

Benefits

-  Scoping & Planning
-  Increased Coverage
-  Better Use of Auditor Resources
-  Improved Results
-  Reduced Costs
-  Increased Performance
-  Increased Analytical Capabilities

Applications

COMPUTER ASSISTED AUDIT TECHNIQUES

Applications

 Data Access, Analysis Testing & Reporting

 Standardized Routines

 Parallel Simulation

 Electronic Workpapers





 Data Warehouse

 Data Mining

Potential Problems

COMPUTER ASSISTED AUDIT TECHNIQUES

Potential Problems

-  Incorrect identification of audit population.
-  Improper data requirements.
-  Invalid analysis.
-  Failure to recognize opportunity.



Case Studies

COMPUTER ASSISTED AUDIT TECHNIQUES

Case Study: R&D Audit

During audit of R&D activities, auditors were unsure as to which projects should be reviewed first. Audit team extracted data from the separate cost tracking systems and joined the data together to create a single record of information for each research activity. The accumulated financial information aided the auditors in highlighting projects with the highest risk and materiality, allowing them to make an informed choice as to which projects should be reviewed.

Case Study: Application Controls

Auditors had concerns over vendor table access and control in part due to the authorization of any invoice clerk to add or delete vendors. As part of subsequent review, summarization of vendors on name and vendor number showed numerous vendors to have more than one vendor number.

In many instances, slight variations in name resulted in different vendor number:

Vendor Name	Vendor No	Address
XYZ Corp.	V456812	1824 Corporate Drive
XYZ Corporation	V555612	1824 Corporate Drive

Case Study: Application Controls

A test for duplicate payments was then performed utilizing the criteria of same invoice number and payment amount.

Results were overwhelming and auditor realized criteria was not sufficiently restrictive. Criteria was further refined by requiring invoices be at least 4 characters in length, invoice amounts be greater than \$1000.

Second extraction produced over 200 possible duplicates. Manual review eliminated 35; final file contained 175 possible duplicates totaling over \$1 million.

Largest 10 payments were selected and manually reviewed, 9 of which turned out to be duplicates.

Case Study: Internal Control Testing - Revenue

Control Objective	Traditional Testing
Unique shipping document numbers are used and items shipped are invoiced timely and accurately.	<ol style="list-style-type: none"><li data-bbox="961 448 1841 629">1. Confirm process and observe use of pre-numbered shipping docs.<li data-bbox="961 648 1841 829">2. Select sample of shipping documents and trace to an invoice for consistency.

Additional items to consider:



- Testing for duplicate shipping documents
- Lag in time between shipping and invoicing

Case Study: Internal Control Testing - Revenue

Control Objective	Testing Approach + CAATs
Unique shipping document numbers are used and items shipped are invoiced timely and accurately.	<ol style="list-style-type: none"><li data-bbox="972 482 1829 582">1. Confirm process and observe use of pre-numbered shipping documents.<li data-bbox="972 596 1797 753">2. Select sample of shipping documents and trace to an invoice for consistency.<li data-bbox="972 768 1824 939">3. Use CAATs to identify gaps in sequence of and/or duplicate shipping documents.<li data-bbox="972 953 1709 1125">4. Use CAATs to identify lag between shipping and invoicing.<li data-bbox="972 1139 1816 1310">5. Use CAATs to identify differences between shipping documents and invoices.

Case Study: Internal Control Testing - Revenue

Benefits

-  Identify weaknesses in control of shipping documents (e.g., unaccounted, duplicates).
-  Quantify differences between shipping and invoicing data.

Case Study: Insurance Premiums

Auditors wanted to verify the calculation of insurance premiums to be paid to moving companies to cover the loss or damage of furniture for employee moves. Copies of the source code were obtained to develop understanding of the routine used to calculate insurance premium. Main cost driver of insurance was determined to be the weight of the goods being moved.

Using software, auditors wrote a program simulating the application's calculation of insurance premiums. Data file was obtained and run using the auditor's simulated logic.

Case Study: Insurance Premiums

Comparing simulation's results with those of the application's, auditors discovered the weight of employees' cars were being added to household goods.

System included the weight of car both under Household Goods and under Vehicles. As a result, the total weight of the goods was overstated by the weight of the vehicles being moved. Effect of logic modification reduced premiums by approximately 30%.

Detecting Fraud




COMPUTER ASSISTED AUDIT TECHNIQUES

Detecting Fraud

The detection of fraud is a perfect application for computer assisted audit techniques.

Detecting Fraud





With audit software:

-  Millions of records can be examined.
-  Previous years' data can be used to identify anomalies.
-  Comparisons can be made between different data sets.




Detecting Fraud

Audit software can easily be used to detect the existence of duplicate or missing transactions, and anomalies.

Detecting Fraud

-  Comparing employee addresses with vendor addresses to identify employees that are also vendors.
-  Searching for duplicate check numbers.
-  Searching for vendors with post office boxes for addresses.
-  Analyzing the sequence of all transactions to identify missing checks or invoices.

Detecting Fraud

-  Identifying vendors with more than one vendor code or more than one mailing address.
-  Finding several vendors with the same mailing address.
-  Sorting payments by amount to identify transactions that fall just under financial control on contract limits.

Digital Analysis

Unexpected patterns can be symptomatic of fraud.

Case Study: Even Amounts

Travel expenses have always been a concern at ABC Company, since it is an area where the controls are weak.

When traveling, employees have a maximum per diem rate and are required to submit receipts coinciding with their actual expenses.

Established maximums for meals are:

- ✓ Breakfast = \$10
- ✓ Lunch = \$20
- ✓ Dinner = \$20

Case Study: Even Amounts

Analyses was performed to identify meal expenses that were multiples of \$10.00.





Transactions meeting the criteria were compared to receipts to ensure that the amounts expensed were appropriate.

Case Study: Even Amounts

The results...




Many were charging the maximum rates for meals even though their receipts did not justify the amounts.

Benford's Law

-  Principle developed by Frank Benford in the 1920s.
-  Predicts the occurrence of digits in natural data sets.
-  Concludes that the first digit in a large population of transactions will most often be a 1.
-  The occurrence of each numeral appearing as the first digit decreases inversely with its value.

Benford's Law

Data compliance guidelines:

-  No set minimum or maximum.
-  There should be no "price break points".
-  The numbers should not be assigned.

Benford's Law

Data sets which can be analyzed include:

 Investment Sales/Purchases

 Expense Accounts

 Check Register

 Wire Transfer Information

 Sales History/Price History

Benford's Law

Data sets which can be analyzed include:

 Life Insurance Policy Values

 401 Contributions

 Bad Debt Expenses

 Inventory Unit Costs

 Asset/Liability Accounts

Case Study: Contract Limits

ABC Company was undergoing investigation for potential fraud in the contracting unit, where thousands of contracts were raised every month.

Using Benford's Law, the first two digits of the contract amounts were analyzed.

The results revealed that the digits 49 were in the data more often than expected.

Case Study: Contract Limits

Data was classified by contracting officer. The contracts of officers with 49 as the first two digits were further examined.

One contract officer had a significant amount of contracts for \$49,000 - \$49,999 to avoid contracting regulations.

Contracts under \$50,000 could be sole-sourced; contracts greater than \$50,000 had to be submitted to the bidding process.

Case Study: Contract Threshold

The results...

Officer was raising contracts just under the financial limit and directing them to a company owned by his wife.

Tools

COMPUTER ASSISTED AUDIT TECHNIQUES

Tools Checklist




- ✓ General Capabilities
 - ✓ Compatibility
 - ✓ Data Size
 - ✓ Documentation
- ✓ Reporting Capabilities
- ✓ Graphics Capabilities
- ✓ Mathematical Functions
- ✓ File Manipulation Capabilities

Tools Checklist







- ☑ Record Definition Capabilities
- ☑ File Type Capabilities
- ☑ Programming Capabilities
- ☑ Support
- ☑ Ease of use/Training Requirements
- ☑ Other

Tools






Easytrieve

-  Technical language a lot like COBOL.
-  Operates in mainframe, UNIX or LAN environments.
-  Requires training to use due to some programming.

Statistical Analysis System (SAS)






-  Technical language in mainframe environment.
-  Requires Training.
-  PC/LAN version features point, click code generation.
-  Operates in mainframe, UNIX, PC or LAN environments.
-  Supports wide variety of data formats.
-  Possesses sophisticated data mining and statistical analysis capabilities.

Audit Command Language (ACL)







-  Operates in mainframe, PC and LAN environments.
-  PC/LAN version supports point & click code generation.
-  Supports a wide variety of data formats.
-  User friendly, and easy to pick up.
-  Used by all Big 4 accounting firms.

Tools

Interactive Data Extraction & Analysis (IDEA)







-  PC/LAN based product.
-  Supports a wide variety of data formats.
-  Point & click code generation.
-  Primarily used by auditors.
-  Use is not as wide spread as ACL.

Microsoft Access

-  PC/LAN based product.
-  Supports a wide variety of data formats.
-  Point & click code generation.
-  Robust Database Structure
-  Limited File Sizes
-  Requires little training to use.




Tools

Microsoft Excel

-  PC/LAN based product.
-  Supports a wide variety of data formats.
-  Limited File Sizes
-  Limited data mining and manipulation.
-  Easy to use/share.
-  Requires little training.

Tools








SQL Interfaces to All Major DB's

-  Real time access to entire data population possible.
-  Unlimited data mining and manipulation possibilities.
-  Requires Strong knowledge of SQL language.




Tips

COMPUTER ASSISTED AUDIT TECHNIQUES

Tips

-  Getting Data is the hardest part.
 -  Make your data request early.
 -  Make the request as specific as possible.
 -  Ask for a download. If its too big, zip it.
 -  Always get a description of the data being provided.
 -  Arrange for a test file if possible.
-  Reports are not always right. Use data to re-perform reports if you can.

Tips

-  Pay attention to interfaces! Cross Border controls usually are weak.
-  Do some basic validations of data before using it.
-  Use independent sources of information to validate your data.

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Questions

COMPUTER ASSISTED AUDIT TECHNIQUES

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