

How to use CAATs for better Auditing

Auditors have been using computers for accounting, data analysis, communication and reporting. With increasing computerisation, it has become critical to use computers for directly auditing the client data. This is where CAATs could be useful.



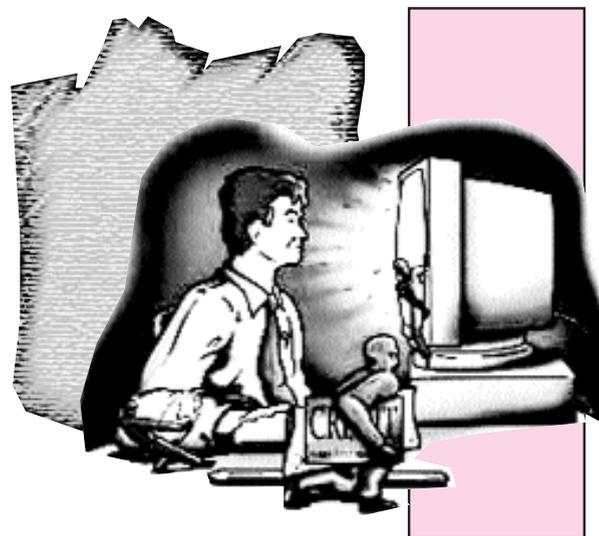
—A. Rafeq

The basic pre-requisite for auditors in this digital decade is to have core competency in using CAATs so as to access and analyse digital data. Auditors can use CAATs to obtain sufficient, relevant and useful evidence as per audit objectives. CAATs also support audit findings and conclusions by facilitating analysis and interpretation of audit evidence. It is important for auditors accessing digital information to know not only key functionalities of audit software but also know how to use these concepts of CAATs by using the auditee applications.

CAATs are broadly categorised into three categories, namely: Generalized Audit Software, Specialized Audit Software and Utility Software. This article outlines general approach for using CAATs and provides overview of features of General Audit Software (GAS) and their usage.

What Are CAATs?

Computer-Assisted Audit Techniques involve the use of computers in the process of an audit rather than limiting it to an entirely 'manual' approach. Originally coined to denote the use of computerized tools to interrogate or extract data from computer systems for audit purposes when the common techniques being applied for performing similar functions were almost entirely manual-based, CAATs are defined as computer based tools and techniques, which facilitate auditors to increase their personal productivity as well as that of audit function. CAATs are software tools for



auditors to access, analyse and interpret data, and to draw an opinion for an audit objective.

Description of Computer Assisted Audit Techniques

ICAI Guidance note on CAAT describes CAATs as important tools for the auditor in performing audits. CAATs may be used in performing various auditing procedures, including the following:

- Tests of details of transactions and balances, for example, the use of audit software for recalculating interest or the extraction of invoices over a certain value from computer records;
- Analytical procedures, for example, identifying inconsistencies or significant fluctuations;
- Tests of general controls, for example testing the

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set-up or configuration of the operating system or access procedures to the program libraries or by using code comparison software to check that the version of the program in use is the version approved by management;

- Sampling programs to extract data for audit testing;
- Tests of application controls, for example, testing the functioning of a programmed control;
- Re-performing calculations performed by the entity's accounting systems.

Need for CAATs

Statement on Standard Auditing Practices SAP 16 states that effectiveness and efficiency of audit procedures may be improved through use of CAATs. During course of audit, auditor is to obtain sufficient, relevant and useful evidence to achieve the audit objectives effectively. Audit findings and conclusions are to be supported by appropriate analysis and interpretation of the evidence. Today's information processing environments pose a stiff challenge to auditor to collect sufficient, relevant and useful evidences since the evidence exists

on magnetic media and can only be examined using CAATs. With systems having different hardware and software environments, different data structure, record formats, processing functions, etc, it is almost impossible for the auditors to collect evidence without a software tool to collect and analyze the records.

Statement on SAP1, "Basic Principles Governing an Audit", states: "The auditor should obtain sufficient appropriate audit evidence through the performance of compliance and substantive procedures to enable him to draw reasonable conclusions therefrom on which to base his opinion on the financial information.

- Compliance procedures are tests designed to obtain reasonable assurance that those internal controls on which audit reliance is to be placed are in effect.
- Substantive procedures are designed to obtain evidence as to the completeness, accuracy and validity of the data produced by the accounting system. They are of two types: --

(a) Tests of details of transactions



In auditing a computerised environment where all significant operations are computerised, it may be impractical to perform audit competently and with assurance unless auditor uses CAATs for collection and evaluation of audit evidence by performing both compliance and substantive tests.

and balances;

- (b) Analysis of significant ratios and trends, including the resulting enquiry of unusual fluctuations and items."

In auditing a computerised

Benefits of CAAT software

The primary benefit of using CAAT software is the ability to access data independent of the systems being used to audit as per audit objectives. CAAT software is one tool to access data across applications and across the enterprise and is capable of per-

forming some audit-specific tests. CAAT software help in all three key areas of audit: collection of audit evidence, analysis and reporting. The auditor using CAAT software can expect improved efficiency and effectiveness of audit department, audit pro-

grammes, increased analytical capabilities and improvement in the quality of audit. This results in better management of audit resources and generates greater opportunities to develop new audit approaches.

environment where all significant operations are computerised, it may be impractical to perform audit competently and with assurance unless auditor uses CAATs for collection and evaluation of audit evidence by performing both compliance and substantive tests. By using CAATs, it is possible for the auditor to perform audit more effectively and efficiently and also have greater assurance on the audit process.

Types of CAATs

CAATs can be broadly categorised into three categories:

1. Generalized Audit Software (GAS): These are also referred as Package Programs. GAS refer to generalized computer programs designed to perform data processing functions such as reading data, selecting and analyzing information, performing calculations, creating data files and reporting in a format specified by the auditor. GAS are standard off-the-shelf audit software which can be used across enterprises and platforms.

2. Specialized Audit Software (SAS): These are also referred to as Purpose-Written Programs. They perform audit tasks in specific circumstances. These are specifically written for performing audit tests for specific type of applications. These programs may be developed by the auditor, the entity being audited or an outside programmer hired by the auditor. In some cases, the auditor may use an entity's existing programs in their original or modified state because it may be more efficient than developing independent programs.

3. Utility Software: These are used by an entity to perform com-

GAS are powerful and readily available tools to help auditors to focus on high-risk areas, perform systematic in-depth analysis of data, and isolate transactions that have symptoms of, and a high potential for, fraud.



mon data processing functions, such as sorting, creating and printing files. Utility software also include utility programs available in system programs for performing debugging or analysis of various aspects of usage/access. These programs are generally not designed for audit purposes but can be used for performing specific tests.

Systematic approach

Auditing in a computerised environment, whether it is statutory audit or internal audit, should have working knowledge of GAS. It is important to develop a plan for analyzing the data to have answers for the following questions: (What, When, Where, Why, and How).

What - Specific objectives that should be addressed by the analysis:

When - Define the period of time that will be audited, and arrange

with IT personnel to secure the data for that period

Where - Define the sources of the data to be analyzed (accounts payable, payroll)

Why - Reason for performing tests and analysis (general review, fraud audit)

How - The types of analysis planned to be carried out by audit. The analysis plan using GAS should be viewed as a framework and not set in stone. The auditor has to be flexible to perform additional ad-hoc tests as required, based on preliminary findings.

The key steps in using General Audit Software are explained here:

1. Set audit objectives
2. Meet with client management
3. Request the data
4. Create or build File definitions
5. Verify data integrity
6. Understand the data
7. Analyse
8. Report

1. Set audit objectives

The first step in using audit software is to identify goals and objectives of investigation or audit. This step involves identification of key objectives, scope and areas of audit. Auditor has to obtain general understanding of the business processes, information technology deployment in the enterprise including significant application systems and internal control system. Based on the scope and objectives of audit, auditor has to identify owner of the possible data sources that will be required to address the audit objectives.

2. Meet with client management

The next step is to identify what information will be required, to address the goals and objectives of

Using CAATS -- Different Perspectives

CAATs could be used not only by auditors and fraud investigators but also by managements. The different perspectives of using CAATs are outlined here.

■ Auditors can use CAAT software to find answers to audit questions. For example: Is management reporting accurate sales? Are payables complete? etc.

■ Fraud Investigators can use CAAT software to identify possibilities of fraud. For example: Where is the evidence of fraud? Where is the audit trail? etc.

■ Managements can use CAAT software for better management of business. For example: Are all the sales reported, vendors paid appropriately, inventory managed properly, etc.

the investigation or audit. For this, auditor has to meet the data owner and application programmer so that based upon audit objective, the auditor can identify data sources, key fields and data elements required by the audit team. It is advisable to get the contact details of key IT personnel who will facilitate this process. Auditor should obtain copy of data dictionary for the application system being audited. Auditor has to understand the system generating the data.

3. Request the data

Once the data required for the audit has been identified, the next logical step is identify data source and key fields and determine timing of data and when the files will be needed. The format in which copy of data (floppy, LAN, CD) will be required by auditor is to be specified. Further, format in which data is required is also to be informed to the auditee. The data format could be DBF, Delimited, Flat File, ODBC, ASCII, Print file, etc. To verify completeness of data, control totals such as total number of records, total of key numeric fields are to be obtained. Further, record layout (field name, start position, length, type, description) are also to

be obtained. It is advisable to have print of the first 100 records for verification of data.

4. Create file definition tables

General Audit Software work on copy of data. To get identified data into GAS, it is important to know the data format. If data is accessible through ODBC, then the file definitions for the data are automatically created for ODBC, Excel and Database files. However, if the data is in format of flat or print files, file definition tables have to be created by using the relevant record structure (data length and data type).

5. Verify data integrity

Once the data has been imported into audit software, it is available for analysis. However, before commencing the audit tests, it is important to check that the data which has been transferred is intact and coherent. The following tests could be performed to check this:

- Use VERIFY Command to check data integrity
- Check GAS totals with control totals
- Check timing of data to ensure proper file has been sent
- Compare GAS view with print-out of first 100 records

6. Understand the data

Import of data into audit software is most significant and critical part of audit process. It is important to understand the data. *The following tests could be performed for this:*

- **Count:** This provides information of the volume of data
- **Statistics:** This gives key statistical information about data such as total, average, maximum value, minimum value, number of transactions per month, etc.
- **Stratify:** This stratifies data as per specified categories to get overall understanding. For example: Inventory as per values and data, transactions as per ledger and date, etc.
- **Classify:** This classifies data into specific categories. For example, classify transaction data as per ledger name or as per date or transaction type.

7. Analyse

The most critical aspect of using audit software is analysis. Auditor needs to have good understanding of functionalities of audit software and know each of these could be used for specific purpose. The type of analysis required has to address the audit objectives. Listing of key functionalities in audit software and type of tests which could be

In an increasingly computerised environment, it is critical for the auditor to move from ticks to clicks and learn to harness the power of computers for audit.

Audit software is only a tool

GAS are powerful and readily available tools to help auditors to focus on high-risk areas, perform systematic in-depth analysis of data, and isolate transactions that have symptoms of, and a high potential for, fraud. While computers are unquestionably faster at many tasks, they are only tools to assist auditors in more efficiently applying their skills and knowledge and are not a replacement for an auditor's judgment and know-how. The power of GAS is derived by auditor's judgment and analysis. GAS can search for relationships between data items, make comparisons across years and/or

between locations as well as sort, search and join data files.

Still, the evaluation, verification and interpretation of GAS generated results will always depend on the auditor's judgment. Some of the key issues in effective use of GAS that need to be considered are incorrect identification of audit objectives, improper definition of data requirement, incorrect data access, inappropriate analysis and incorrect conclusion drawn. It is important to involve everyone relevant and plan and document the audit process and requirements.

performed are given in annexure. The key to effective application of GAS lies in the auditor's ability to query data interactively and carry out additional analysis based on the results of the previous queries.

8. Report

Audit software have features for maintaining audit log and audit tables which includes details of all activities performed in the audit software right from importing of the data, performing of different types of analysis to printing of reports. Generally, data as analysed can be viewed on screen. Further, features for printing of standard report and customised reports are also available. It is advisable to print all the relevant evidence in the form of file definition tables, statistics of tables imported, results of audit, audit logs, audit tables, notes, auditee and audit details.

Conclusion

CAATs and more specifically audit software have the potential to enable auditors to recognize computer as a tool to assist them in the audit process. Audit software give



auditors access to data in the medium in which it is stored, eliminating the boundaries of how it can be audited. Once auditors accept and learn how to use audit software, they will be in a better position to create value addition in their audit and for the auditee. The greatest barrier in promoting use of audit software is failure to recognize opportunities to use audit software for audit. Understanding and recognizing how CAATs can be used and knowing how to use audit software is most critical to its effective use.

Using audit software enhances the effectiveness of audit and enables auditor to provide better assurance to their clients. In an increasingly computerised environment, it is critical for the auditor to move from ticks to clicks and learn to harness the power of computers for audit. Using audit software as

their tool for auditing digitized data, auditor can shift focus from time-consuming manual verification audit procedures to intelligent analysis of data to provide assurance to clients and manage audit risks.

Highlights of Key Functionalities of Audit Software are as follows:

1. Import Wizard: Brings the file into its own database management system. User-friendly Import Wizard guides user through a series of steps and instructions for importing the file into the Software.

2. Find: Find command finds and highlights the specified search content present in the current active file. The 'Find All Having' command and 'Find Next' command will find the first appearance of the search text. The 'Find All Records Containing' command finds all the occurrence of the text to be found and filters the current active file based on the occurrence of the text.

3. Auto Filter: The Auto Filter command is similar to the Auto Filter in Excel. It filters and displays the rows that met the selected value from the Filter list.

4. Sort Fields: Use sorting to

display the data in the desired order on single field or multiple fields.

5. Identify Duplicates: Use this command to detect whether key fields in the current file contain duplicates in the sequence. It can be used to identify duplicates within a single field such as duplicate invoice numbers on an account's receivable file. The Duplicate Key Exclusion command identifies duplicate items in a file but only where a further specified field is different.

6. Sequence: Sequence command checks for duplicate or missing document numbers, such as invoice or check numbers. Sequence always checks the designated key fields to determine if they are in sequential order and reports in the results.

7. Identify Gaps: Numeric, character or date: Detect gaps in the sequence on numeric, character or date

8. Extract: Selected data from a file for further investigation for creating a new file of logically selected records.

9. Export: Creates an external file that can be used directly by other Software for further processing. The External file created is of the requested format, containing the data as extracted based on specified conditions. Stratification enables the auditor to direct audit efforts towards the items, which, for example, contain the greatest potential monetary error. For example, the auditor may direct attention to larger value items for accounts receivable to detect overstated material misstatements. In addition, stratification may result in a smaller sample size.

10. Stratify: Numeric, Date

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or Key Field: Stratification totals the number and value of records within each specified value band and produces a stratification report. You can extract the specified records by double clicking on the relevant stratum of the stratification result view.

i. **Date Stratification** command totals the number and value (of selected fields) of records within each specified Date band.

ii. **Character Stratification** command totals the number and value (of selected fields) of records within each specified character band.

iii. **Key Field Stratification** command totals the number and value of records within each specified value band and produces a stratification report, for each major control break as the major index field key changes.

11. Classify: Counts number

of records relating to each unique value of a character field and accumulate totals of specified numeric fields for each value.

12. Aging: Presents aged summaries of data. This summary may be based on the current date or a specified cutoff date.

13. Statistics: Provides the summary of the current active file. It quickly highlights abnormalities in the file, which can then establish a direction for subsequent approach or analysis. Statistics produces summaries for each kind of data type i.e., Numeric, Date and Character data type.

14. Summarize: Accumulate totals of numeric fields for each distinct value of the key character fields. Key Field Summarization command accumulates the totals of numeric fields for each distinct value of the key character fields.

15. Join Files: Combine the fields from two files and creates as a single file. Two files, indexed or sorted on the same key, are required to carry out this function.

16. Relationship Builder: Data required for analysis may be stored in different files. You can relate records from these different tables and perform analysis and get the report.

17. Compare Files: Compare two files based on some numeric field and produce reports on differences between the two and also identify number of records in each file for each key.

18. Append Files: Concatenate two files. Append records of primary file in Secondary File. The appended file maintains same record structure and sorted sequence, which, has been maintained

AUDITING

in files selected for appending.

19. Systematic Sampling:

This command is an objective statistical sampling method to draw a number of records with fixed interval from a file. You can also select a set of random record numbers

from an internally generated seed, (or one provided by yourself), and selects the records associated with each random record number.

20. Analytical Tool:

Designed to offer maximum flexibility and features for data analysis.

This offers query type functions in wizard, advanced and SQL mode.

The greatest benefit of using CAATs is the 'time saved' and the potential to 100% auditing of the data.

Using Audit software: Some Practical Examples

Category	Type of Analysis	GAS Functionality
Tax Audit	Identify cash loan/deposits > 20000 Identify cash payment > 10000 Review of TDS compliance Analysis of Inventory	Sort, Filter, Extract, Export, Index, analytical tool Sort, Filter, Extract, Export, analytical tool Join, Relation, Sort, analytical tool Aging, MIS, Classify, Count, Total
Financial audit	Review of Authorisation Review of discount policy Compliance with tax rates – sales tax, etc Verification of financial accuracy Aging of debtors	Filter, Extract, Classify Stratification, Classify, Summarise Join, relation, filter, extract, sort, count, Total, Compare files Summarise, Sort, Statistics, Total, Classify, Analytical tool Aging, MIS, Periodicity check
Internal Audit	Overall statistical analysis Identification of exception items Duplicate payment for invoices Debtors outstanding beyond credit period Age-wise analysis of debtors Age-wise analysis of inventory	Statistics, Benford's Law, Summarise Benford's Law, Filter, Gap detection Identify duplicates, Sequence, Join, Relation, Aging, Classify Aging, MIS, Classify, Statistics Aging, MIS, date difference Aging, Stratify, Classify, Total, Count
Purchases	Duplicate payments Invalid vendors Duplicate invoices Invalid purchases Payments without receipt of goods Inflated prices Excess quantities purchased	Duplicates, Sequence, Relation Join, Relation, Sort, Classify, Filter Duplicates, Sequence, Relation Join, Relation, Sort, Classify, Filter Join, Relation, Compare files, Filter, analytical tool Filter, Sort, Stratify, Join, Relation Filter, Sort, Stratify, Join, Relation
Payroll	Ghost employees TDS Duplicate direct credits Duplicate home addresses PO Box addresses Work Phone Nos. Work Location Deductions Vacation and sick leave Wage level Terminated employees Overpayment, overtime	Join, Relation, Classify, Sort, Statistics Re-computation using analytical tool Identify duplicates, Sequence, Relation Identify duplicates, Sequence, Relation Identify duplicates, Sequence, Relation Identify duplicates, Sequence, Relation Identify duplicates, Sequence, Relation Re-computation using analytical tool Re-computation using analytical tool Join, Relation, Summarise, Statistics Join, Relation, Filter, Statistics Classify, Statistics, MIS, Join, Relation
Aging	Overdue A.R. and A.P. Favorable credit terms Inventory turnover rates Dormant accounts Records with future, blank or otherwise invalid dates Items past a cutoff date Contracts awarded before contract date Transactions outside of billing period Length in days of various activities	Aging, MIS, date difference Aging, MIS, date difference, Stratify, Filter, Classify, Identify Gaps, date difference Sort, Filter, Sequence, Identify Gaps, Date difference, Statistics, Count Date difference, Aging, Filter, Date difference, Aging, Filter, Classify, Summarise, Statistics Aging, Filter, Classify, Statistics Date difference, Aging, Filter, Classify, Date difference, Aging, Filter, Classify, index, periodicity check....

