



CAATs: The Essential Tools to Audit Digital Data¹

Chartered accountants deal with information in myriad ways encompassing the areas of accounting, assurance, consulting and compliance, and most of this information is now available in electronic form. This is true not only in case of large and medium enterprises but also in case of small enterprises. In case there are enterprises that have still not adopted the digital way, it is an opportunity for CAs to help such enterprises to ride the digital wave. Hence, it has become critical for CAs to understand and use information technology as relevant for the services we provide. It is rightly said: “one cannot audit data which is flying in bits and bytes by using the ancient method of riding on a horse back”. We are living in a knowledge era where the skill sets are key to harnessing the power of technology to be effective as knowledge workers. Computer Assisted Audit Techniques (CAATs) refers to using technology for increasing the effectiveness and efficiency of auditing. CAATs enable auditors to do more with less and add value through the assurance process which is more robust and comprehensive. This article provides an overview of the process, approach and techniques which could be used across various technology platforms and in diverse enterprises.

The All-Encompassing Electronic Data

A great blessing in ancient times was: “May you live in exciting times”. Indeed, we are living in exciting times without even being aware of it. We are experiencing how technology innovations are making our life and living simpler by bridging global boundaries and bringing global information on our finger tips. For enterprises as well as professionals, the question is no longer what technology can do for us but what we can do with the technology. The question “do I need to use technology” is no longer relevant and instead the relevant decision is about “how do I use technology to remain relevant”. Information technology is all pervasive and more so as the government and regulatory agencies are also using technology platforms to provide services to citizens and compelling information to be filed in electronic form. The government at all levels has drawn up ambitious plans to implement e-Governance initiatives to improve speed, access and transparency of services. The Information Technology (IT) Act 2000 with IT Amendment Act 2008 and IT rules 2011 provide the regulatory framework and mechanism for recognising electronic records and electronic transactions thereby facilitating ecommerce and also identifying cybercrimes and providing penalties and compensation for them. Hence, we can expect IT usage to only keep growing in the near future impacting all areas of life more so our work as professionals.

CAs and CAATs

As a chartered accountant, we come across computers

and communication technology as the most common denominator among our clients, both large and small. Further, we use computers and communication technology for providing services to our clients. In today’s complex and rapidly changing technology environment, it is important to master the right techniques which could be used across enterprises and across various technology platforms. Typical of a IT environment are the speed of processing, large capacity of storage, lack of the paper based trails, the radically different way of information processing, the ease of information access, internal controls being imbedded and the ever-present risk of failure of IT and loss of data. All these factors make it imperative for auditors to harness power of technology to audit technology environment by taking into consideration the risks, benefits and advantages. CAATs empower CAs with the key survival techniques which effective used in any IT environment. CAATs are not specialist tools designed for use by specialist IT auditors but these are

**Any electronic information
that is auditable
is a potential candidate
for applying CAATs**

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Flow chart for using CAATs



common techniques which can be easily mastered to audit in a computerised environment for statutory audit, tax audit and internal audit as also for providing consulting services.

CA + IT = CAATs

CAATs are tools for drawing inferences and gathering relevant and reliable evidence as per requirements of the assignment. CAATs provide direct access to electronic information and empower auditors not only to perform their existing audits more efficiently and effectively but also facilitate them in knowing how to create and execute new types of IT related audit assignments. CAATs provide a mechanism to gain access and to analyse data as per audit objective and report the audit findings with greater emphasis on the reliability of electronic information maintained in the computer system. There is higher reliability on the audit process as the source of the information used provides and greater assurance on audit findings and opinion. CAATs are available in specific general audit software designed for this purpose but the techniques of CAATs can be applied even by using commonly used software such as MS Excel and by using query/reporting features of commonly used application software. CAATs can be used to perform routine functions or activities which can be done using computers, allowing the auditors to spend more time on analysis and reporting. A good understanding of CAATs and the knowledge as to where and when to apply them is the key to success. ICAI has published a guidance note on CAAT and publication titled "Data Analysis for Auditors" which may be referred for more details.

Need for CAATs

In a diverse digital world of clients' enterprises, the greatest challenges for an Auditor is to use technology

to access, analyse and audit this maze of electronic data. CAATs enable auditors to move from the era of ticks using pencil or pen to the era of clicks by using a mouse. CAATs will help auditors to change focus from time-consuming manual audit procedures to intelligent analysis of data so as to provide better assurance to clients and also manage audit risks. Some of the key reasons for using CAATs are:

1. Absence of input documents or lack of a visible paper trail may require the use of CAATs in the application of compliance and substantive procedures.
2. Need for obtaining sufficient, relevant and useful evidence from the IT applications or database as per audit objectives.
3. Ensuring audit findings and conclusions are supported by appropriate analysis and interpretation of the evidence.
4. Need to access information from systems having different hardware and software environments, different data structure, record formats, processing functions in a commonly usable format.
5. Need to increased audit quality and comply with auditing standards.
6. Need to identify materiality, risk and significance in an IT environment.
7. Improving the efficiency and effectiveness of the audit process.
8. Ensuring better audit planning and management of audit resources.

Key Capabilities of CAATs

CAATs refer to using computer for auditing data as per audit objectives. This requires understanding of the IT environment and most critically the core applications and the relevant database and database structure. CAATs could be used by using the relevant functionalities available in general audit software, spreadsheet software or the business application software. However, broadly the key capabilities of CAATs could be categorised as follows:

1. *File access*: This refers to the capability of reading of different record formats and file structures. These include common formats of data such as database, text formats, excel files. This is generally done using the import/ODBC function.
2. *File reorganisation*: This refers to the features of indexing, sorting, merging, linking with other identified files. These functions provide auditor with an instant view of the data from different perspectives.
3. *Data selection*: This involves using of global filter conditions to select required data based on specified criteria.
4. *Statistical functions*: This refers to the features of sampling, stratification and frequency analysis. These functions enable intelligent analysis of data.

5. *Arithmetical functions*: This refers to the functions involving use of arithmetic operators. These functions enable performing re-computations and re-performance of results.

Step by Step Methodology for Using CAATs

CAATs are very critical tools for Auditors. Hence, it is important to formulate appropriate strategies to ensure their effective use. Some of the key strategies for using CAATs are:

1. Identify the scope and objectives of the audit. Based on this, auditor can decide about the need and the extent to which CAAT could be used.
2. Identify the critical data which is being audited as per audit scope and objectives.
3. Identify the sources of data from the enterprise information system/application software. These could be relating to general ledger, inventory, payroll, sundry debtors and sundry creditors.
4. Identify the relevant personnel responsible for the data and information system. These personnel could be from the IT department, vendors, managers, etc.
5. Obtain and review documents relating to data/information systems. This should provide information about data types/data structures and data flow of the system.
6. Understand the software by having a walk-through right from user creation, grant of user access, configuration settings, data entry, query and reporting features.
7. Decide what techniques of CAATs could be used as relevant to the environment by using relevant CAAT software as required.
8. Prepare a detailed plan for analysing the data. This includes all the above steps.
9. Perform relevant tests on audit data as required and prepare audit findings which will be used for forming audit report/opinion as required.

Steps for Obtaining Audit Data

In most cases where CAATs are used, it becomes necessary to obtain copy of data in their original format for independent analysis. The data has to be obtained in commonly accepted format. It is important to understand the format in which the data is stored in the application which is being audited. If the data is a native format which is not readable by audit software, then it is necessary to use the reporting feature of application software and export this data to commonly recognisable format of audit software. For example, auditor may not be aware of the data structure/tables of a software developed through a vendor by the client. In such case, auditor may have to study the reporting features and use the export feature to get the data in the required format. It is very important to educate the client about the need to obtain copy of the data as required for audit. Based on the audit scope and relevant audit

Where we are Today?



Where We Need to be?



environment, auditor may have to finalise the required approach for getting the data for audit. This may include installing audit software on client system or using the application software for audit as feasible. Broadly, some of the key steps for obtaining data are:

1. Discuss with client about the requirement of raw data for audit and issue a request letter for getting the requested data in specified form as per the audit objectives.
2. Discuss with the IT personnel responsible for maintaining data/application software and obtain copies of record layout and definitions of all fields and ensure that you have an overall understanding of the data. The record layout should describe each field and provide information about the starting and ending positions and the data type (numeric, alphanumeric, character, etc.).
3. Print sample list of the first 100 records in the data file and compare this to a printout of the obtained data to confirm they are correct.
4. Verify data for completeness and accuracy by checking the field types and formats, such as identifying all records with an invalid date in a date field.
5. Obtain control totals of all the key data and compare

with totals from the raw data to ensure all records have been properly obtained. This can be performed by importing the data in audit software and reviewing the statistics of all the key fields.

Tests Performed Using CAATs

CAATs can be used for compliance or substantive tests. As per the audit plan, compliance tests are performed first as per risk assessment and based on the results of the compliance tests, detailed compliance tests could be performed. Some examples of tests which can be performed using CAATs are given below:

1. *Identify exceptions:* Identify exceptional transactions based on set criteria. For example, cash transactions above ₹20,000.
2. *Analysis of controls:* Identify whether controls as set have been working as prescribed. For example, transactions are entered as per authorised limits for specified users.
3. *Identify errors:* Identify data, which is inconsistent or erroneous. For e.g.: account number which is not numeric.
4. *Statistical sampling:* Perform various types of statistical analysis to identify samples as required.
5. *Detect frauds:* Identify potential areas of fraud. For example, transactions entered on week-days or purchases from vendors who are not approved.
6. *Verify calculations:* Re-perform various computations in audit software to confirm the results from application software confirm with the audit software. For e.g. TDS rate applied as per criteria.
7. *Existence of records:* Identify fields, which have null values. For example, invoices which do not have vendor name.
8. *Data completeness:* Identify whether all fields have valid data. For example, null values in any key field such as date, invoice number or value or name.
9. *Data consistency:* Identify data, which are not consistent with the regular format. For example, invoices which are not in the required sequence.
10. *Duplicate payments:* Establish relationship between two or more tables as required. For example, duplicate payment for same invoice.
11. *Inventory obsolescence:* Sort inventory based on data of purchase or categorise as per specified aging criteria or period and identify inventory which has become obsolete.
12. *Accounts exceeding authorised limit:* Identify data beyond specified limit. For example, transactions entered by user beyond their authorised limit or payment to vendor beyond amount due or overdraft allowed beyond limit.

CAATs and Auditing Standards

The various standards on auditing highlight the need for acquiring the required skill-sets to audit in an IT

environment and using relevant techniques. Many of the requirements of the auditing standards can be complied by adopting them for use in an IT environment as required. For example, Standard on Auditing (SA) 520 Analytical Procedures states: "**A1. Analytical procedures include the consideration of comparisons of the entity's financial information with, for example:**

- *Comparable information for prior periods.*
- *Anticipated results of the entity, such as budgets or forecasts, or expectations of the auditor, such as an estimation of depreciation.*
- *Similar industry information, such as a comparison of the entity's ratio of sales to accounts receivable with industry averages or with other entities of comparable size in the same industry.*

A2. Analytical procedures also include consideration of relationships, for example:

- *Among elements of financial information that would be expected to conform to a predictable pattern based on the entity's experience, such as gross margin percentages.*
- *Between financial information and relevant non-financial information, such as payroll costs to number of employees.*

A3. Various methods may be used to perform analytical procedures. These methods range from performing simple comparisons to performing complex analyses using advanced statistical techniques. Analytical procedures may be applied to consolidated financial statements, components and individual elements of information."

Most of the analytical procedures can be performed in an IT environment using CAATs which makes the audit process much more effective and efficient.

Conclusion

CAATs enable auditors to use computers as a tool to audit electronic data. CAATs provide auditors access to data in the medium in which it is stored, eliminating the boundaries of how the data can be audited. As auditors start using CAATs, they will be in a better position to have a considerable impact on their audit and auditee as more time is spent on analysis and less time on routine verification. It is important to understand the client IT environment and chart out which techniques of CAAT could be used. Initially, time needs to be invested in this endeavour but once the audit plan is prepared based on the IT environment as per audit scope, re-use becomes easier. However, the audit plan and tests need to be updated based on changes in the IT environment as relevant. Using CAATs provides greater assurance of audit process to the auditor and also to the auditee. The key to using CAAT is recognising the need, learning how to use CAATs and using them in practical situations. ■