

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

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A ROLE OF KNOWLEDGE BASED SYSTEM IN INFORMATION SYSTEM AUDIT**A. B. DEVALE****ASST. PROFESSOR****ARTS, COMMERCE & SCIENCE COLLEGE****PALUS****DR. R. V. KULKARNI****PROFESSOR & HEAD****SHAHU INSTITUTE OF BUSINESS EDUCATION & RESEARCH****KOLHAPUR****ABSTRACT**

Computers have had a profound effect on both the type and way business is done or service is rendered. IT that integrates computer and communication technology has revolutionized the way business is done and created new avenues to deliver services. It is not only a tool for generating business information, but has also become essential for business survival and success. However, implementing IT has its own inherent risks. So security features have to be implemented in accordance with the internal control requirements of the organisation. IT controls when properly implemented provide is more reliable than manual checks. Through this article, researchers are trying to evaluate the usage of Computer Software in Information System Audit.

KEYWORDS

IS audit, GAS, CAAT, snapshot.

1. INTRODUCTION**INTRODUCTION TO IS AUDIT**

An IS audit is defined as an audit that encompasses a whole or partial review and evaluation of automated information processing systems, related non-automated processes and the interfaces between them. This definition provides a very broad ambit for an IS audit and covers a review of all or any aspect of the IT environment from development to deployment, from planning to monitoring and from acquisition to delivery. An IS audit is expected to provide reasonable assurance to the management on quality (effectiveness, efficiency and economy), external IT (confidentiality, integrity and availability) and fiduciary (compliance and reliability). IS auditors help their clients to understand and manage IT risks. It enables IT organisations to use leading edge technology and stay ahead in a competitive environment by implementing business and process-oriented controls. The scope of IS audit is defined by the auditee organisation based on their specific needs.

IS auditing involves the evaluation of systems and procedures to ensure that assets are safeguarded, the integrity of computer data is maintained, and the objectives of the organization are achieved. The objective of the IS audit is to determine if all control procedures for computer systems are in place, and to identify any areas where control can be improved. Both these functions will reduce potential losses.

The IS audit is designed to evaluate the adequacy of internal control with regard to both specific computer programs and the data processing environment as a whole. This includes evaluating both the effectiveness and the efficiency. Though both these terms are used interchangeably, they differ. The focus (scope and objective) of the IS audit is not only on security (confidentiality, integrity and availability), but also on effectiveness (result orientation) and efficiency (optimum utilisation).

2. IS AUDIT APPROACH

Primarily the audit process involves collecting and evaluating evidence in accordance with the objectives. The general objective of any IS audit is to provide reasonable assurance that IS controls are adequate and appropriate. This would involve evaluation of the existing Internal Control System, identifying the related risks and exposures and reporting them for remedial action. In any IS audit, it is essential to understand critical elements of the business- vision, mission, processes or cycles, structure and information systems. This process involves evaluating the existing information architecture by answering the following questions -What IT is used? How is IT deployed? What are the key business processes? How does the information system work? What are the key controls? What are the benchmarks or yardsticks for measuring performance or results?

Any IS audit assignment begins by defining the scope and objectives. Based on this, the auditor should obtain a clear understanding of business operations, compliance requirements, technology deployed, organization structure, related risks of technology deployment and system of internal controls. He could then adapt the standards and benchmark for audit, develop an Information Model for collecting and evaluating evidence and execute the audit. This IS audit process also involves the review of risks, security and controls to identify control weaknesses and suggest corrective measures.

3. AUDITING THROUGH THE COMPUTER

With the introduction of computerization, traditional audit trail has disappeared. The entire processing cycle occurs within the computer systems. No corresponding manual documents are generally available. It is thus necessary to examine the internal working of the computer system. The auditor can verify the technical accuracy of the systems, checks, controls, error detection and data security procedures. He can use test-checks or print outs to test the system in operation and improve the quality of his own audit. Thereby using computer he can reduce the time spent on detailed manual verification of transactions.

The system of controls, examination and testing of computer-implemented controls is mandatory for an auditor. This process can be done using computer. In some cases, though the sheer volume and complexity of transactions might necessitate the use of other corresponding powerful tools. Computerised audit refers to the approach of reviewing the internal controls in the computerised environment. An understanding of the IT environment, its components and their operations is thus necessary. The objective is to understand the system and the processes and identify the risks and controls at the system or process level itself. This is essential test weakness at the system or process should percolate to the activities level. Proficiency in computers becomes obligatory here. It is also essential to know the implications of how the controls are set up in the computerised environment at the various levels of hardware, operating system software, database, application software around the computer and access to these by the staff as per authorizations.

4. AUDITING IN A COMPUTERIZED ENVIRONMENT

There is no standard software for computerised auditing. The objective and scope of audit differs with the type of audit i.e., tax audit, statutory audit, etc. Thus, the methodology of audit may vary depending on the IT environment of the client. The deployment of IT resources for a specific environment consists of different information technology resources such as information technology facilities, technology (hardware, operating system software, telecommunication software, networking software, multimedia software), application software, and business process and organizational structure. So numerous types of information technology

set-ups are possible depending on the combination of information technology resources deployed. Hence, there cannot be any standard software for auditing all types of computerised environment. This does not however mean that the auditor should be knowledgeable about all types of hardware, software and application packages.

Nevertheless, the auditor must have certain key competency areas of computer:

- A thorough understanding of the fundamental concepts of Information Technology
- Its key components and
- How they function

A CA should be knowledgeable about computer hardware, operating systems, networking, database, application software, risks and controls of a computerised environment and office automation software. Equipped with these skills, a CA can audit any type of IT environment. If necessary he can obtain technical assistance from internal or external sources.

5. COMPUTER PROGRAM APPROACH

This approach involves running the auditor's program on a controlled basis to verify the client's data recorded in a computer. The auditor can potentially perform different kinds of tests and functions with a computer program if the client's data is available on a computer. A major problem in computer testing client data is obtaining a suitable programme at a reasonable cost. Two options are available:

- Writing a programme specifically for the audit
- Using a Generalised Audit Program

The first option requires the auditor to be technically competent in programming and methodology around computer, which may not be his area of expertise. Following Computer audit software are readily available and do not call for much expertise from the auditor can be used.

6. GENERALISED AUDIT SOFTWARE (GAS)

Computer audit software may be defined as: "The processing of a client's live files by the auditor's computer programs". Computer audit software may be used either in compliance or substantive tests. The use of Generalised Audit Software is perhaps the most widely known computer assisted audit technique. GAS has standard packages developed by software companies exclusively for auditing data stored on computers. These are economical and extensively used by auditors world over. Available off the shelf, GAS can be used for a wide range of hardware, operating systems, operating environments and database. Generalised Audit Software (GAS) refers to standard software, which can directly read and access data from various database platforms, flat file systems and ASCII formats. This software has all the features of mathematical computations, stratification, statistical analysis, sequence check, duplicate check, re-computations, etc. Auditors can thus directly access the data stored in a computer and undertake various types of mathematical computations and statistical analysis. GAS cannot perform the audit but can facilitate selection and processing the information as per the auditors' requirements.

7. CAATS

Computer Assisted Audit Techniques (CAATs) is a significant tool for auditors to gather evidence independently CAATs provide a means to gain access and analyze data for a predetermined audit objective and to report audit findings with evidence. They help the auditor to obtain evidence directly on the quality of the records produced and maintained in the system. The quality of the evidence collected confirms the quality of the system processing. CAATs could be used for various types of audit, which involve direct access, analysis and interrogation of data. CAATs facilitate auditors to use high-level problem solving software to invoke functions to be performed on data files. The packages are independent of the data they retrieve and analyse. The user merely needs to define the data structures and specify simple selection criteria. But the usage of CAATs will be effective if the areas of weakness are identified after performing compliance tests and evaluating the results. If the results necessitate substantive testing, CAATs is recommended to get evidence. Normally, audit conclusion and recommendation are based on the evidence collected by auditors. Audit conclusion based on incorrect and / or inappropriate evidences will reduce the credibility of the audit itself. Hence manual methods may be used to analyse the conclusions later.

8. SNAPSHOT

Most applications follow a standard procedure whereby after taking in the user input they process it to generate the corresponding output. Snapshots are digital pictures of procedures of the console that are saved and stored in the memory. Procedures of the console refer to the application procedures that take input from the console i.e. from the keyboard or the mouse. These procedures serve as references for subsequent output generations in the future. Typically, snapshots are implemented for tracing application software and mapping it. The user provides inputs through the console for processing the data. Snapshots are a means through which each step of data processing (after the user gives the input through) is stored and recalled. Specifically designed snapshot software applications or audit tools (incorporating snapshot software) are used for tracking every step involved in the output generation process. It takes the "digital picture" of the user input and the corresponding output. Subsequently, digital pictures or snapshots taken by the snapshot software are stored in the computer memory to be retrieved later. The digital pictures (stored in the memory) are distributed to selected servers and clients. This implies that these are selectively accessible and cannot be retrieved by every user in the organisation. These are stored once in a day on a regular basis and available in read-only mode, so as to keep track of changes in application programs. One more important point to remember about snapshots is that, they do not take pictures of the system data. In fact they store the digital pictures of the running transactions (or current input/output operations).

9. INTRODUCTION TO KNOWLEDGE MANAGEMENT SYSTEM

AI provides not only new paradigms for problem solving but also new representation formalisms which allow the explicit representation and use of the knowledge of the domain, mainly by rule-based

and constraint-based representation of knowledge. A Knowledge-based system is a computer program that uses knowledge to solve complex problems. Knowledge is acquired and represented using various knowledge representation techniques rules, frames and scripts. The basic advantages offered by such system are documentation of knowledge, intelligent decision support, self learning, reasoning and explanation. Knowledge-based systems are systems based on the methods and techniques of Artificial Intelligence. Their core components are:

- knowledge base
- acquisition mechanisms
- inference mechanisms

Knowledge Base Systems (KBS) goes beyond the decision support philosophy to indicate the expert system technology into the decision making framework. Expert Systems (ES) have been the tools and techniques perfected by artificial intelligence (AI) researchers to deduce decision influences based on codification of knowledge. The codification of knowledge uses the principles of knowledge representation. Typically such codification uses rules like IF-THEN rules to represent logical implications.

Now days, knowledge-based systems appear to be more generally recognized technology. This paper identifies the more recent specific applications of knowledge-based system in the field of Information System Audit, technology that have garnered attention of many organizations and professional chartered Accountants.

10. AUDITING THROUGH KNOWLEDGE BASED SYSTEM

Computerised audit refers to the approach of reviewing internal controls in the computerised environment. Before using auditing software it is important for the auditors to understand the system, the processes and identify the risks and controls at the system as well as the process level. This requires an understanding of the IT environment and its components. Similarly the auditing softwares discussed above are having their own limitations. The system like GAS, CAAT or Snapshot can be considered MIS or DSS which will support the decision taken by the auditors. Hence as far computerized auditing is concerned, it is very important that system should be based on the expert knowledge of which results can be highly accurate and less human intervention is required in evaluating the results generated by it.

The Information Systems Audit Standards require the course of an audit, the IS auditor should obtain sufficient, reliable and relevant evidence to achieve the audit objectives. The audit findings and conclusions are to be supported by the appropriate analysis and interpretation of this evidence. Computer Assisted Audit Techniques are important tools for the IS auditor in performing audits. They include many types of tools and techniques, such as generalized audit software, utility software, test data, application software tracing and mapping, and audit expert systems. Computer Aided Audit Techniques may be used in performing various audit procedures including: Tests of details of transactions and balances (Substantive Tests)

- Analytical review procedures
- Compliance tests of IS general controls
- Compliance tests of IS application controls

Computer Aided Audit Techniques may produce a large proportion of the audit evidence developed on IS audits and, as a result, the IS auditor should carefully plan for and exhibit due professional care in the use of Computer Aided Audit Techniques. The main difficulty and modelling and formalizing knowledge in the audit field is the complexity of information system audit, which requires performing of some expertise that use knowledge from separate or interrelated field of knowledge. The purpose of this paper is to examine the current state of expert systems and decision support systems in auditing. In so doing we will examine completed or prototype expert systems and decision support systems in both external and internal auditing, including special areas of focus such as EDP auditing and governmental auditing. This paper focuses on those auditing based systems those have appeared in the literature or have been presented at a conference or of which the authors are aware.

11. CONCLUSION

Although the above mentioned auditing techniques are still in the early stages of development, most of the researches are based on security measures and applications such as accounting information system. A large proportion of the current research effort is limited to the researchers that are normally associated with professional associations and organizations related to information systems auditing. Computer programs, such as expert systems, can be used to improve the consistency of human responses and mitigate errors. Utilization of the expert system will lend consistency, thoroughness and verifiability to the audit opinion decision process. Certainly there is feasibility and the benefits of applying expert systems methodology to Information system auditing. As the system evolves, it can acquire more knowledge and gradually take over some additional, more judgmental, tasks. Hence researchers propose a system as a start towards a longer-range goal of expert systems for information system audit and administration. The system will be one component in provision for risk assessment, maximizing security, and, its integrity is dependent upon the soundness and completeness of the auditing procedures that it implements. Also system will demonstrates the feasibility and scope of potential automation of the information system

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