Challenges for Audit

After having explored the opportunities and benefits of the application of modern audit software, conceptually and with case studies, it seems only fair to conclude with a discussion of some of the challenges facing audit. The first part of the chapter explores the issue of the survival of the audit organization itself and concludes with the individual auditor's requirements for training.

This chapter discusses the necessity for audit to become a learning organization and to continually strive to improve its service to the client. The first section discusses the need for audit to adopt a new paradigm, to be empowered through the ability to access and use data, and to ensure the skill levels of all auditors can face the tasks. The final section offers some concluding thoughts and recommendations.

Survival of Audit

Audit is under more pressure than ever before. From sources outside the company, including stakeholders and investors, there has been an increase in the number of lawsuits for negligent performance of duties. From within the company, there is an increased demand for efficiency and effectiveness. Increased coverage and more cooperative audits are also desired by many clients.

Forces within the internal audit organization are also at work. The issues of compliance versus comprehensive auditing, control self-assessments, and outsourcing have touched many auditors and will continue to bear upon the audit organization and the audit profession itself.

Having lived through a reorganization, a corporate downsizing initiative, and a reengineering exercise does not make one an expert in organizational survival, but it does give one a unique perspective. The business world is becoming more competitive, leaving less room for nonproductive overhead. As a result, audit must continue to evolve and really pay its way by reviewing

the appropriate areas and demonstrating its worth to the organization. This requires highly skilled individuals using modern auditing techniques and approaches.

Fortunately, audit technology is up to the challenge. More than ever before, auditors have a significant yet underused arsenal of tools at their disposal. Prices of hardware and software have decreased at the same time as the power and utility of the technology has increased. What remains is for auditors to change their mode of thinking and embrace the new technologies and auditing approaches.

It has been said that if you only maintain the skills you have today, without improving or growing, you will be obsolete in five years. This is true for auditors and for audit organizations. Growth and learning are, quite simply, an issue of professional and organizational survival.

Audit as a Learning Organization

Today, organizations are endeavoring to maintain their competitiveness, innovation, and effectiveness through organizational learning. A learning organization is an organization that deliberately builds structures and strategies in order to increase the likelihood that organizational learning will occur (Dodgson [1993]). Organizational learning is affected by the organization's structure, strategies, environment, culture, and technology. Learning is a dynamic activity that emphasizes the need for continual change; it is as essential for organizations as it is for individuals. While the concept of organizational learning was developed to apply to entire corporations, it applies particularly well to audit.

Learning is not a passive activity. Organizations must actively seek out opportunities to learn. There are four main activities that contribute to organizational learning: knowledge acquisition, information dissemination, information interpretation, and organizational memory (Huber [1991]).

Knowledge Acquisition

Knowledge acquisition is the accessing of key information sources and the retrieval and manipulation of the data contained therein. CAATTs support these activities by providing the means to conduct research; to store, manage, process, and retrieve information; and by providing capabilities for the interpretation, reformulation, and critical evaluation of information.

The audit organization must also strive to learn more about its own operations. How well is it serving its clients and senior management? What areas does audit need to place additional emphasis on (e.g., training, resources, etc.)? In particular, the development of an audit universe and risk

analysis models helps an audit organization learn more about client operations and about its own skills and capabilities.

Information Dissemination

Information dissemination is the sharing of organizational information among its employees. This sharing further encourages learning and understanding by all involved. Information systems, such as e-mail, document delivery systems, groupware, and workflow systems, facilitate the sharing of information. These systems also support feedback and review mechanisms as well as collaboration between auditors and between auditors and their clients.

Information Interpretation

Information interpretation is the conversion of raw data into actual, useful information and the establishment of meaning in context of the organization's operations. This is accomplished by selecting, screening, using, evaluating, and comparing data from various sources and by matching the auditor's understanding of the resulting information with the originator's intended meaning and end user's interpretation.

Audit software is ideal for these purposes. It allows auditors to interact with the data and develop a deeper understanding of the information. During the course of audits, this understanding is put to the test as auditors use the information they have gained to assess operational business areas.

Organizational Memory

Organizational memory or corporate knowledge is the storage of knowledge for future use. Organizational memory plays an important part in organizational learning by allowing members to learn from past events. Thus, a major challenge for audit organizations is creating organizational memory and making it readily accessible to all auditors.

Methodologies, audit programs, lessons learned, review results, analytical tools and techniques, and other information must be easily accessible by all auditors.

Information technologies such as intranet and hypertext are catalysts that facilitate the creation of such organizational memories and improve the ability of the organization to learn from its successes and failures. But technology cannot, in isolation, ensure that organizational memory is sought out and acted upon. The organizational structure and culture must encourage and support both the creation and use of organizational memory.

The development and use of CAATTs enables audit organizations to engage in continuous learning. CAATTs directly support knowledge acquisition, information dissemination, information interpretation, and organizational memory. CAATTs can increase information sharing, communication, and understanding and can improve the quality of decisions made by the audit organization.

Audit will contribute to the continued growth and the usefulness of the audit organization by:

- Developing information repositories
- Using software tools and analysis techniques more efficiently and effectively
- Providing all auditors with information support and analysis assistance
- Developing specific applications to support the core audit business functions

The use of CAATTs can help ensure that the audit organization is continuously learning and improving and is helping the entire organization to learn.

New Paradigm for Audit

The types of audit support and the capabilities of modern audit tools have grown and improved faster than organizations have managed to adapt to and make maximum use of them. Today, two different paradigms seem to coexist for the use of audit software: Computer-Assisted Audit Techniques (CAATs) and Computer-Aided Audit Thought Support (CAATS).

The emphasis of this book has been on the need for audit to shift from Computer-Assisted Audit Techniques to Computer-Aided Audit Thought Support. The first paradigm merely involves the automation of manual tasks, while the second paradigm enables the auditor to use more judgment and exercise critical thinking (Will [1995]). Consequences of each paradigm are briefly discussed as follows.

Computer-Assisted Audit Techniques

The consideration of audit software as a means of defining and executing Computer-Assisted Audit Techniques (CAATs), rather than as a new approach to audit, is building on a paradigm that was developed for manual audit approaches. The approach simply automates and applies manual techniques to large mainframe computer environments. The CAATs do not have any methodological implications for auditing. Audit programs

use computerized techniques, but remain fundamentally the same as when performed manually.

Computerizing traditional manual audit approaches ignores the risks and misses the opportunities provided by the electronic nature of the data. Also, the approach does not capitalize on the advances made in computer technology. Moreover, it increases the actual costs of auditing and seems to ignore the opportunity costs associated with the use of mainframe computers.

Clearly, the rapid expansion of computer technology into all aspects of the business world has had a major impact on internal audit. User-friendly microcomputers, easy-to-use software, end user computing, and the networking of microcomputers, locally and globally, with each other and with mini and mainframe computers, have changed the business environment. But not all audit organizations have fully accepted the challenges and benefited from the opportunities inherent in the technology.

Computer-Aided Audit Thought Support

There are increased demands on audit to perform rational and critical assessments of all aspects of the business. This, in turn, is forcing audit to conceive of and apply audit software primarily for the support of critical minds rather than as the mindless application of automated techniques.

A distinction can be made between the context of discovery (the invention of hypotheses and theories, apart from any concern for their origin or for their form) and the context of justification (the evaluation of hypotheses and theories on the available evidence in light of the rules of deduction and induction). More than ever before, auditors must be able to operate in the context of discovery and that of justification.

Since auditors must justify an opinion, they work both in discovery and in justification modes. To do so, they need to be able to identify appropriate data holdings and understand the associated file structures and meaning of the individual data elements. They must also be able to define and then test various hypotheses in an iterative and interactive fashion.

Audit software provides opportunities for creating new or for using existing file descriptions for various database and file structures with diverse data types. This facilitates independent access to all data as raw evidential material by audit, without the involvement of computer programmers.

In order to test data and information, auditors must be able to (re)define the conditions and the rules under which the data entered into the application system were manipulated and transformed. Modern audit software provides virtual (computed) field definitions and numerous functions for the interpretation and logical or mathematical extension of actual data, including error conditions.

These auditor-computed fields and definitions can be stored as separate knowledge files for use in different contexts. This provides the auditor with the ability to maintain and apply sets of common error conditions, extensions, meanings, and special types of data under varying circumstances.

In order to facilitate the confirmation, corroboration, and simulation of information based on available data, not only are powerful commands available, but so too are scripts or macros—even interactive ones. The scripts are flexible and can be easily modified. Using audit software, the auditor can define scripts that can be executed immediately or in delayed fashion and with different user interface options.

Due to the interactivity of modern audit software, the results are immediately available to the auditor and can be used without delay. Alternatively, execution can be deliberately delayed and scheduled at special times to follow up on suspicious conditions. The interactivity also allows auditors to rethink an approach and to use new conjectures in a creative and critical discovery mode based on one's imagination, recent hunches, or new empirical findings. Thus, the auditor is empowered to use audit software in different ways under different circumstances—when and as the auditor sees fit.

Auditor Empowerment

Within the context of this characterization of auditing and audit software, it is now useful to distinguish different kinds and degrees of empowerment of auditors in modern organizations. The degrees of empowerment can be defined in terms of accessibilities (Will [1995]). If we assume that individuals in general, and auditors in particular, are naturally critical and intelligent and know best what is good for themselves and for the organizations to which they belong, we can identify important resources that are helpful to auditors and others in their organizations:

- Access to microcomputers and computer networks
- Access to audit software, which can be applied as a comprehensive meta-language for independent testing
- Universal access to all data and information
- Access to education and training in support of critical and relevant thinking in an information-technological context

Due to the increasing amounts of digitized data and information, auditors need access first to hardware and second to software under their own control. Third, they require unrestricted access to the data (and the underlying documentation) from the business applications of the audit entity.

Access to the data allows the auditors to apply the software critically and intelligently in order to test the reliability of the information independently.

The ultimate aim is to gain and to communicate knowledge that is expected and required of auditing as a value-adding activity. Thus, auditors also need access to the clients whose activities are being evaluated and to the stakeholders to whom they report. The analyses of the data must be performed with an understanding of the operational context of the client operations. Otherwise, the auditors would merely work in the virtual reality of computer systems rather than within the business or operational reality under which their clients labor.

Finally, auditors need access to education and training in support of critical thinking.

Access to Microcomputers and Computer Networks

Since increasing amounts of evidential matter is digitized and under the control of the client, audit requires independent computer hardware to access the data and to test the information. Of course, since computer hardware works only with the appropriate software, auditors need independent access to both.

The microcomputer (r)evolution not only made computing power more accessible to all, but also the networking possibilities of linking them with other computers have resulted in wide distribution of computing power locally, as well as globally. Today, several networks of networks exist and distribute raw computing power, as well as access to data and information in multimedia modes of operation even further.

Auditors within the audit organization and auditors in remote locations or other companies are easily connected to other auditors via computer networks (LANs and WANs), as well as intranets and Internet.

Access to Audit Software—Meta-Languages

Thinking requires and happens in terms of, and by means of, language. Meta-languages allow us to make critical and independent assessments of statements made in object languages. Thus, if we consider accounting as a formal language, it becomes necessary to use a meta-language for auditing and control purposes (Will [1983]). Modern audit software is the meta-language that allows auditors to assess and report on information contained and manipulated for accounting purposes independently.

As already indicated, audit software provides independent, universal, and direct access to practically all data generated by means of computers. Audit software uses a natural language interface, allowing auditors to interact with the audit software in a language that is similar to their native tongue.

This interface minimizes the linguistic overhead and mental translation effort required by the users of the software. Auditors can analyze data using audit software easily using a command structure and syntax similar to their own language. It also allows the users to apply their natural thought processes when performing analyses of the data.

Universal Access to Data

Auditors' effectiveness is not only dependent on their intellectual capacity and ability to translate their tasks into meta-language expressions, statements, and programs; equally important is easy access to all evidential matter: data, documentation, comments, information, logs, notes, results, text, and variables.

Universal access, not only to all files, records, and fields, but literally to any and every bit (binary digit) of information, is essential for auditors. This is because the data may represent important evidential matter. Auditors can have direct access to the data files or indirect access via printouts of database or file contents. Direct access requires an auditor to have a good understanding of the file structure. Indirect access reduces the data definitional complexity but loses some of the technological independence.

As already indicated, in addition to accessing the actual data stored in files and databases, auditors will want to derive additional data as virtual fields or variables, define error conditions and extensions, and attempt interpretations of the stored data.

Naturally, the ease and speed with which data and information can be tested and (re)processed determines the auditor's efficiency to a large extent. This explains why modern audit software, rather than the traditional mainframe-based batch processing, operates in an interactive mode. The auditor can pose questions directly of the data and obtain near instantaneous results. The interaction of the auditor with the data is one of the key aspects of thought support to audit.

In summary, in modern organizations, the empowerment of auditors is primarily a matter of authorization to buy the inexpensive hardware and software required to do their job. Using their critical mentality, auditors can add credibility to the information if they have available audit software—a meta-language—to test all relevant data and information independently. Of course, they must also possess unrestricted access to any and all relevant evidential matter maintained and stored in analog or digital form, along with a critical mental attitude.

Access to Education, Training, and Research

Despite all efforts to make the powerful audit technology globally available with intuitive user interfaces and in natural language versions, learning to

use it may require formal education and training. Part of this requirement is the need for auditors to change the way they view the world. The old paradigms may be deeply entrenched within the audit organization, making it difficult to adopt new approaches and techniques, but they are not windows to the modern world.

AUDITOR TRAINING   The tools and techniques you learned as little as five years ago may only satisfy a portion of your current job requirements. It used to be sufficient for auditors to have little or no knowledge of computerized applications. Now, with technology so pervasive in the business environment, auditors must have at least some degree of computer literacy.

LIFELONG LEARNING   With change being the predominant climate of today, everyone interested in keeping up must become a lifelong learner. Lifelong learning used to be an attitude or a state of mind of the intellectually curious who were bored with the status quo in most respects. Today, it is more a matter of survival.

Applied to auditing, this means that we have to cultivate our naturally critical attitudes in such a way that our mentality is geared to the success and survival of our audited organizations. In addition, we must be able to make the value-adding contributions that are expected of auditors. Management can support this mentality by encouraging auditors to grow with their job. Formal or on-the-job training, coupled with ongoing support and encouragement, can help auditors remain current. Auditors can be assigned to integrated teams, where auditors with different skill sets work together and learn from each other. The notion of the integrated auditor, unheard of by many organizations only a few years ago, is not a thing of the future, but a reality in many organizations.

PROGRAMS AND PROGRESS   In order to encourage and facilitate lifelong learning, management must offer staff attractive programs and monitor their professional progress continuously. Then it is possible to suggest upgrading or professional development opportunities and to design and offer relevant programs. Management may proclaim that the company's greatest resource is its people, but unless they act to develop and retain their employees, it is only talk. Others have fully recognized the importance of training their employees and have developed standards for the provision of training (e.g., ten days per auditor per year). Training budgets are based upon these standards, and yearly evaluations of work performance are closely linked to the identification of training requirements for the next year. However, the identification of training requirements is not as easy as selecting courses from a glossy brochure.

Skills Inventory

The changing requirements of audit demand that the skills of auditors change as well. Audit managers must develop an understanding of where audit is going and what skills auditors will require to get them there. More often than not, ensuring that auditors have the requisite skills involves the provision of training. But training dollars are not easily found and, therefore, must be spent wisely. Conducting a needs analysis can help audit managers do a better job of identifying the training needs of their staff, thereby contributing to the effective use of their training budget.

The key elements of a needs analysis are to determine:

- What skills the auditors have
- What skills they need or will need to do their jobs

The difference between the current skills of the auditor and the required skills represents a training requirement.

A good needs analysis can make training more effective and meaningful. Proper identification of training requirements can also help employees to be more productive and happier in their jobs. The proper definition of training requirements for the organization will help ensure that scarce dollars will be spent on training that is required, rather than courses that seem attractive but are not relevant to the auditor's job.

Needed versus Actual Skills

In a study rating the importance of academic subjects, computer software and accounting information systems were in the top ten areas where more education was felt to be needed (Novin and Pearson [1994]). Further, electronic spreadsheets, database management systems, and word processing were in the top 20 areas where more education was needed. So, the issue of IT training is not one that was unrecognized, and it is still an important issue today.

The main objectives of an information technology (IT) needs analysis are to answer the following questions:

- What job-related IT skills do auditors need in order to perform audits?
- Which auditors require these IT skills for their jobs?
- What should be taught in order for the auditors to master these skills?
- Given limited resources and time, which skills should be taught first?

There are several steps involved in conducting a proper needs analysis. The first is the delineation of the auditor's job, including the identification of

all tasks performed as part of the job. To do this, the audit manager should:

- Identify all the tasks an auditor is expected to perform in order to do the job
- Define the IT skills that the auditor must have in order to perform these tasks effectively
- For each auditor, determine the tasks they are performing satisfactorily and the tasks where the auditor must improve his or her performance

For example, during an audit, one task may be analyzing client data files. This requires the auditor to have many skills including keyboarding, an understanding of basic computer terminology and concepts, a working-level knowledge of the data analysis software, and knowledge of the client's computer applications. If one or more of the required tasks are not performed satisfactorily because of insufficient skills, the analysis of the data may be inaccurate and, so too, the results of the audit.

Performing a needs analysis for the entire audit organization can be a daunting undertaking. Analyzing the skills and performance levels of all auditors may take more time than is available. It can be simplified by grouping auditors into several categories by position (junior auditor, senior auditor, etc.) and then developing a list of tasks. This list is, quite simply, a list of all IT tasks that need to be performed in order to conduct an audit. Since not all auditors will require the same level of skills or even the same skills, the audit manager can use the task list to determine which auditors require which skills. Only those auditors performing the tasks need have their skill levels evaluated for that task.

The first step in developing this list is to identify all the audit positions that will be analyzed. Next, define all the computer-related tasks appropriate to an audit. Finally, itemize the IT tasks that are applicable for each audit position. For example, see Exhibit 7.1.

By completing this type of information for each task and for each audit position type, the audit manager defines the tasks required to perform the audit. The next step in the needs analysis is defining the skills an auditor must have to perform each of the required IT tasks successfully. While some tasks may only require one skill, others may require the auditor to have a number of skills (see Exhibit 7.2). Once again, the process can be simplified by:

- Selecting the relevant tasks from the task list for each audit position
- Listing all the skills required to perform the task

The information is completed for each audit position to provide an information technology skill profile for the position. For example, see Exhibit 7.3.

EXHIBIT 7.1   Audit Positions

Tasks	Jr*	Sr*	IS	Mgr
Extract data from client system		×	×	
Develop data format files		×	×	
Build spreadsheets	×	×	×	×
Track resources (project management)		×		×
Search reference libraries	×	×	×	×
Review source code listing			×	
Develop system flowcharts		×	×	
Evaluate system controls				×

*Note: Jr and Sr positions are non-IS auditors.

EXHIBIT 7.2   Skills

Tasks	Uses JCL	Interprets Databases	Writes Programs	Uses Micro
Extract data from client system	×	×		
Develop data format files		×		
Build spreadsheets				×
Track resources (project management)				×
Search reference libraries				×
Review source code listing			×	
Develop flowcharts			×	
Evaluate controls		×		

EXHIBIT 7.3   Skill Profile

Position: IS Auditor
Skills: programming:
— Reads source code listings and follows program logic
— Develops methods to evaluate program integrity
— Maps controls and risks to develop test procedures
— Writes parallel simulation routines using microcomputer programming language
— Interprets database structures and performs extractions of data for further testing

The next step is to determine the required level of skill for the audit position. A rating scale such as shown below can be employed to rate each of the required skills:

> 0 - conceptual knowledge only
> 1 - minimal level of proficiency
> 2 - working level of proficiency
> 3 - advanced knowledge and skills

In addition to rating the job requirements, the actual performance level of the employee for each task must be evaluated. A simple matrix can be designed for each audit position.

Required versus Actual Performance

The final step is to identify the skills that the auditor requires for the job, but where the actual level of the auditor's performance falls below the job requirements. For example, the position requires the auditor to have a working level of proficiency in mapping controls and risks to develop test procedures, but the auditor only has a minimal level of proficiency. The gap or shortfall may represent an area where training is required; however, other factors may inhibit employee performance in these areas. Conducting the needs analysis in conjunction with a performance evaluation activity can determine the root cause of the gap in performance (required versus actual). The evaluation process can help the manager decide whether training will be an effective means for closing the gaps or not (see Exhibit 7.4).

If it is determined that a gap in the auditor's performance is a result of lack of training, the next step is to prioritize the training requirements. The employee's supervisor can determine which skills are the most critical and assign the training as high priority for these skills. In the event that some of the training requirements cannot be satisfied or that the time frame is too long, the supervisor should try to provide some other form of assistance. Perhaps an auditor with the necessary skills could work on that phase of the audit with the auditor requiring training. Many options may be considered to address the performance gap.

EXHIBIT 7.4   Sample Evaluation Rating

Skill Programming:	Required for Job	Actual Level
Reads source code and follows program logic	2	3
Develops test data to evaluate program integrity	3	3
Maps controls and risks to develop test procedures	2	1

The needs analysis should not be a one-time activity. Once developed, the lists of tasks and skills will not require a great deal of effort for them to be kept up to date. Also, the utility of the job profiles can be increased if they are used as part of the annual performance evaluation process. In addition, the needs analysis results can be used to develop a core curriculum for IT training in the audit department. This curriculum would detail required and recommended courses in the IT area. Further, the skills lists can be used during the hiring process to screen potential candidates or to provide junior auditors with an idea of what skills would be required for more senior positions.

The following presents a proposed set of skills for non-IS auditors who are required to use automated tools and techniques in performing their jobs. The second set of skills list the suggested requirements for IS auditors.

Auditor Skills for Using CAATTs

At the introductory level, the auditor using CAATTs should have a good grasp of IT concepts, such as field, file, record, and an understanding of the organization's main applications. The auditor should be aware of the types of data contained in these applications and their potential use for audit.

At the intermediate level, auditors should have a good working knowledge of audit software. In addition, the auditor should be able to determine the application-specific criteria necessary to define the audit population. These criteria are used to extract the records that will be accessed or downloaded to the audit software.

At the senior level, the auditor should be able to formulate an analysis plan to support the objectives of the audit. This will include determining the data required (applications and transactions), as well as the analysis approach (types and nature of the tests to be performed). The senior auditor should also contribute to the growth of CAATTs in the audit organization by assisting in the planning and development of new techniques and the use of new technologies.

IS Auditor Skills

At the introductory level, IS auditors require a basic knowledge of the underlying principles and features of IS development. They should also have an appreciation of the business processes that are supported by the applications. This includes an understanding of basic information systems security and general and application control concepts and techniques. The IS auditor should have a good grasp of the audit software and be able to analyze data extracted from application systems.

At the intermediate level, IS auditors should be able to assess the application and general controls relevant to an information system. They should have a good knowledge of flowcharting and an ability to read source code and apply audit software for program testing. They should understand IS issues and risks well enough to be able to address the need in audit planning, testing, analysis, and reporting.

At the senior level, IS auditors should be able to evaluate and design application control frameworks for major application systems. Further, they should be able to plan and direct audits of existing systems and systems under development. They should understand the business components and information systems technologies sufficiently well enough to be able to identify threats and vulnerabilities. General and application control implications should be well understood. The senior IS auditor should also be able to direct, supervise, and provide quality assurance on audit software applications and analyses.

Training Programs and Requirements

Once the skills inventory is complete, the training program needs to be designed and planned according to the identified requirements. Since technology is relatively easily learned, it makes sense to distinguish between conceptual and technical training, in order to develop a balance.

Conceptual Training

Technology is both the cause and effect of changes in auditing, and correspondingly, in audit education and training. Therefore, it is essential that auditors understand conceptually the fundamental changes in the audit environment and how to react to them. For example, what does it take to convince oneself that computer-based information is believable? What could have possibly gone wrong? What, how, and how much do I test for internal consistency of the information and for its correspondence with reality? What is required to convince the recipients of accountability information that they can believe it? What decisions does a recipient of audited information have or want to make?

The conceptual dimensions of audit education and training are nontrivial challenges and ought to be considered prior to the design of and participation in training programs. Numerous articles have been written discussing the issue of core competencies for auditors. Virtually every article written in the last five years has recognized IT as a key audit skill. Not only do auditors require an excellent understanding of the concepts, but they are required to be proficient with audit software. However, these are also areas

where many auditors lack the requisite skills, and even educational institutions have failed to deliver courses that meet current audit requirements (Novin and Pearson [1994]).

Technical Training

Since discussions of technical training have been presented in the previous chapter, it is not necessary to repeat them, except to stress again that technical training without a conceptual understanding of the audit issues is frequently a waste of the resources. It is therefore critical to plan the training in such a way that both aspects—conceptual and technical—are adequately covered.

Training Options

Among the training options available, we can identify in-house training, courses through professional associations and educational institutions, and computer-based or video training.

In-house

One of the best ways to develop conceptual and technical training is to develop in-house courses and case studies. This ties the technical aspects directly to the conceptual aspects, using actual data and systems in place in the organization. Familiarity with data and problems not only makes the grasp of the technicalities much easier, but also promotes critical thinking if the findings seem familiar but are in fact unexpected. The use of actual audit cases and results will help auditors who are new to the technology or new to the organization to develop a better understanding of the audit and corporate information technology environments. In addition, it will demonstrate current audit approaches, techniques, and capabilities and provide participants with a better awareness of the corporate information systems.

In-house training sessions are also an opportunity to bring together staff from branch offices or staff who are working in different audit disciplines (finance, personnel, etc.). This is often an excellent chance to share ideas and information.

Professional Associations

Professional associations offer a number of relatively inexpensive training courses in which one can meet people with similar problems and challenges.

If they are well-designed, they will be conceptually and technically balanced and integrated.

Professional associations also offer two- to three-day seminars and conferences. These offerings are an excellent chance to become exposed to the conceptual thinking behind new and emerging ideas.

Finally, attendance at courses offered by professional associations is sometimes necessary to meet the ongoing requirements for a professional designation.

Educational Institutions

Educational institutions vary in their training capabilities, but auditors should not limit themselves only to publicly funded or formally recognized institutions. For example, software companies can offer highly innovative training in their products in ways that go beyond the mere technicalities. Modern audit software is a case in point and such an innovation that its capabilities have hardly been grasped by the majority of auditors. It is therefore essential to select the appropriate training, not only according to the advertisements, but according to the educators and trainers involved.

Not surprisingly, a number of educational institutions are also offering in-house training and are willing to develop special in-house modifications of successful courses and seminars. They will also develop tailor-made courses and train-the-trainer sessions that provide in-house trainers with training and course materials for future in-house sessions. The advantages of external courses (educational institutions and professional associations) may include the soundness of the pedagogical approach, the quality of the instruction and materials, and an opportunity to meet and share ideas with other professionals from a wide variety of companies.

Computer-Based, Video-Based, and Web-Based Training

Many software and training companies have developed excellent computer-based, video-based, and Web-based training programs. These programs may be combined with workbooks and computer exercises. There are a number of advantages to computer, Web, and video-based training, including self-paced learning (students can review the materials at their own pace), consistency of instruction (every student, whether they take the course today or next year, receives the same quality of instruction), portability (the students can take the course home with them, use the Internet to access it while on-the-road, or it can be shipped to a branch office), and cost (the cost per student, often already fairly low, is reduced each time another person takes the course).

Web and video instruction is particularly suited to the presentation of ideas and concepts. Live or animated action can be used to portray complex ideas more easily than straight text or instructor-led training. Computer-based instruction has the added advantage of allowing the user to interact with the software in order to obtain hands-on practice.

Summary and Conclusions

The use of IT in audit must be carefully planned and supported by senior management. While CAATTs can produce significant benefits, the improper introduction of technology can also have serious negative consequences. In many audit organizations, credibility is a valued but fragile commodity. Audit must continually demonstrate the value and utility of its work by producing high-quality, timely audits of areas of high risk. The incorrect use of technology could produce erroneous conclusions and damage the credibility of the audit organization with the client. It could also make any subsequent attempt to employ CAATTs more difficult. However, the successful use of CAATTs can enhance the credibility of the audit organization.

The identification of CAATT requirements and the activities conducted to meet these requirements must be user-driven and coordinated across the audit organization. The ability to access and process electronic information from mainframe systems, local systems, and external sources is critical to the success of many audits. But the audit organization may have a unique and comprehensive set of requirements for the use of technology to support its business and strategic functions.

Audit requires support and advice from IS specialists with a working knowledge of the audit processes. This core of specialists would offer a single point of contact for all technology-related requests and would ensure that requests from management and team members are properly addressed in a timely fashion. Members of this group must be visible to the end users and knowledgeable of, and responsive to, their specific needs. At the same time, the group must be proactive in recognizing opportunities for the application of CAATTs and in marketing existing and new applications of technology. The IS specialists can also offer support and advice to auditors who are new to the technology and audit software.

The skills required to remain effective in an increasingly technologically complex world must be developed, nurtured, and supported. The efficient and effective use of CAATTs by end users with a variety of computer skills requires the development of a standard, user-friendly, integrated environment and the provision of specialized training and information technology support.

Auditability is not possible without empowerment and not meaningful or useful without a critical outlook. Likewise, empowerment is no longer possible without access to modern computer-based audit technology. Modern audit software was designed to empower auditors to do the job expected of them. It facilitates critical reviews of accountability information by value-adding professionals who can produce knowledge for rational (re)action rather than merely providing more information to already confused or overloaded recipients of information.

Understood this way, auditors are indeed key human resources who must be empowered and expected to produce knowledge because auditing is (part of) the continuous and necessary research effort to keep expanding knowledge and preserving truth in order to ensure the success and survival of our organizations and societies in a competitive world. Audit must live and grow if our organizations are to remain viable.