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COMMITTEE REPORT

The Usage of Computers in Auditing Teaching and Research

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THE American Accounting Association Audit Section created its first technical committee in response to the needs that arose from the impact of information technology on auditing. This committee was charged with exploring the current state-of-the-art use of computers in audit education and research.

This report is composed of a series of descriptions illustrating the efforts made by academics and professionals in the education and use of data processing. This account is not intended to be comprehensive, but rather illustrative.

The audit profession has been slow in integrating computer technology into audit procedures, with the exception of the rapid increase in the use of microcomputers witnessed over the last two years. Consequently, the integration of computer technology into auditing is an area of outstanding opportunity for auditing researchers and practitioners — a chance to cooperate effectively in advancing knowledge and redesigning the audit practice.

Summary of the Report of the Technical Committee of the Audit Section of the American Accounting Association. The complete report and bibliography can be obtained from PM&M's ROADS program or from the Accounting Research Center, Columbia University.

IMPACT OF INFORMATION TECHNOLOGY

This section discusses two of the many areas of information technology: (1) data communications (DC), and (2) database management systems (DB).

Data Communications

Cost trends of data processing equipment indicate expected cost reductions at the rate of 20 percent per year over the next decade. The impact on the business and auditing environment will be immense. The cost reduction in the data communications area, although not as spectacular, will probably result in a greater geographical disperson of users and equipment. Remote access and transfer of data will create greater security and data integrity problems; however, it may make off-site auditing feasible.

Another facet of data communications is the advent of networks such as ARPA and Bitnet. These will substantially facilitate the transfer of software and data among educational and research institutions. In addition, the NSF has been supporting experimentation in teleconferencing using ARPA. This will ease the problems of communication between researchers of different institutions. The advent of distributed corporate databases and the intense usage with corporations of long distance and local area networks (LAN) poses interesting audit and educational problems.

Many more opportunities for direct data communication interchanges between firms, universities, and university campuses will be made possible by these developments. Three general issues affecting these exchanges are (1) communications and the accounting policies of various colleges, (2) the funds available at the business schools, and (3) system compatibility problems. With some allowance for increased system campatibility, the near future should bring complete access to programs, data, and output, subject only to security concerns.

Database Management

Databases provide an effective and efficient method for storing data. Global database systems will become more prevalent in the future, especially as more suppliers incorporate the database control language into their operating systems. Generally, from a programming point of view, the database system facilitates program change and maintenance.

Impact

The communication and database concepts will affect the academic community in at least two areas. First, the computer system and the data stored on that system will be available to even unsophisticated users in a transparent manner. Very powerful analysis tools will be made available to the general user. Second, the DB/DC environments will require a different approach to accounting and control. Such changes will be identified, studied, accommodated, and communicated to users via manuals, texts, etc. In fact, they could be communicated via a computer learning network.

A committee of the IIA, CICA, and AICPA is looking into the audit implications of database systems (AICPA, 1982). Additionally, the committee is examining database administrative and security problems from an audit point of view.

RESEARCH ON INTERNAL CONTROL EVALUATION

This section describes work involving formalized internal control description, design, analyses, and evaluation, with special emphasis on the TICOM system. TICOM (The Internal Control Model) combines the areas of internal control and mathematical symbolic languages.

nition and continuing with execution and modification, using the list feature for documentation.

The major strengths of the TREAT system are that it is easy to use; it is online, conversational, and makes use of English language commands. Error detection and feedback features are built in. In terms of documentation, a limitation is that the system could more fully identify errors and give correction hints. In addition, TREAT is a large program, requiring substantial storage to operate many terminals for student use.

The ACL (Audit Command Language) System

ACL (Audit Command Language) has been developed by Professor H. Will at the University of British Columbia. The idea behind its design is the consolidation of as many machine-supportable accounting and audit tasks as possible. Thus, ACL is an accounting and audit data management system as well as a decision-support system for accountants and auditors. It is also a working paper generator which documents the user dialogue in a file that can be printed or edited further. The ACL user can perform his tasks interactively or in batch mode.

The audit commands refer to single and multiple files and include the data processing functions as well as histograms, random number generation, regression, sample evaluation, selection and size determination, statistics, stratification, and verification of data types. ACL is used in educational contexts, practice, research, and teaching. ACL is embedded in a supervisory system which can be monitored for managerial and research purposes.

ACL is a "generalized audit software system" as well as an "individualized computer audit package" (directory features). As a language, it "lives" and can mirror the computational sophistication of its user; it is easily learned in one terminal session by using EXPLAIN features and computerized tutorials.

ACL has been used at U.B.C. since 1973. The German government has funded an ACL-based project for the development of a portable audit language. The project combines an effort at databank interface standardization with the need for auditability of management information systems.

The WASP (Wayne Audit Software Package) System

WASP is a highly-interactive, student-oriented collection of programs for auditing data files. This package, developed by Professor Myles Stern at Wayne State University, is designed to be used interactively by the auditor as he or she examines a client's data files. The programs are written entirely in the MTS version of BASIC. Professor Stern's purpose in developing WASP was to give accounting students a taste of audit software packages as they are currently used in audit practice.

Functions performed by the WASP package include file specification, report generation, random sampling, field "footing," record count and sequence check, and printing of selected records.

The WASP system currently lacks select and print, algebraic calculations, and descriptive statistics modules. The system does allow for a series of exercises to illustrate the use of audit software by students.

CONCLUSIONS AND RECOMMENDATIONS

Some examples of potential technologies to be incorporated in auditing practice, education, and research are:

Practice:

(1) Online auditing
(2) Automated working papers
(3) Automated scheduling of staff

(4) Management science-based optimization techniques (in sampling and audit planning, for example)
(5) Teleprocessed auditing (using DP as means of firm integration and quality control)
(6) Using prediagnostic algorithms
(7) Auditing decision support systems
(8) Developing basic definition of EDP control
(9) Expert systems as decision support aids

Education:

(1) Incorporating the computer as an integrated tool
(2) Training on a wide range of technologies, e.g., personal processes, etc.
(3) Computer Assisted Instruction (CAI)
(4) Remote question answering

In Research:

(1) Analytical formulation of internal control schemi systems
(2) Define control and control mechanisms
(3) Access to working paper databases
(4) Develop knowledge bases to support artificial intelligence research
(5) Usage of optical scanning to develop research databases
(6) Develop technology for on-site continuous monitoring and auditing of internal control systems
(7) Usage of computer communications to facilitate research work
(8) Developing auditing techniques for office information systems

These and numerous other related areas are ripe for exploration and research by academics and practitioners. This report has illustrated certain audit practices, education, tools, and research ideas in auditing. A few careful recommendations may be drawn from this discussion.

Educational software should be supported by academic administration and practice. The software allows for technological development, experimentation, and student training in a classroom environment. Existing software is inadequate, but is growing in sophistication.

Second, we believe that there should be an increase in analytical and theoretical research in areas related to auditing technology. In the future efforts such as TICOM may precede rather than follow practical software development efforts.

Third, we strongly advise the constant monitoring of the effect of technological change upon the profession. Databases, data communications, microcomputers, and networks have exerted marked influence on the appearance and operations of business organizations; the consequences are still not fully understood by auditors.