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## EDP Department: Microcomputers and their Effect on Auditing

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# Microcomputers and their Effect on Auditing

By Jerry King, Stanley Lewis and Judith Abendschein

## Auditing Microcomputers

### Control Problems:

Auditors use personal computers as an audit tool to make examinations more effective and efficient. Additionally, auditors concern themselves with micros used by clients in their operations, since there is difficulty in controlling usage of these computers. Since they are easily transportable, the auditor cannot be sure that the micro being examined is the one that the client actually uses. It is very easy for the client to add or remove various boards and/or chips before the auditor arrives.

Most micro application software includes the source code(s) which contains the actual instructions for the program. Thus, the microcomputer user has access to this information which allows for potential undetectable modification of the programs that a business uses daily.

Internal control procedures that provide for separation of duties simply may not exist. An on-line system allows the micro user to input orders directly into the computer. Thus, allowing the user to choose from the controls prescribed by management. Sometimes, there are not any policies by management that deal with the control of personal computers.

### Control Procedures:

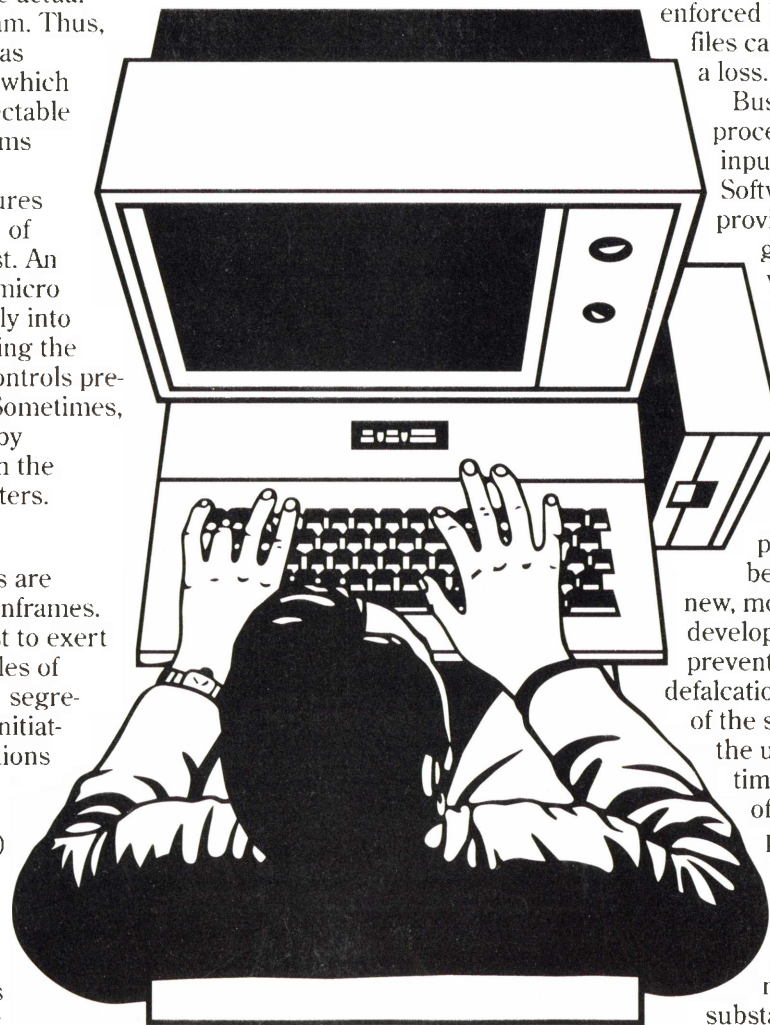
Clearly, microcomputers are harder to control than mainframes. However, possibilities exist to exert control over them. Examples of control procedures are (1) segregation of the functions of initiating and recording transactions and storing data, (2) close supervision of the micro users and their actions, (3) training programs to ensure a minimum level of computer skill, (4) required vacations of employees which provides an opportunity to discover

problems or irregularities that an employee may have, and (5) the company should have a policy of recruiting, hiring, and promoting honest and competent employees.

Businesses using micros should control the acquisition of software by having a list of application and control features required for all programs purchased. There should be software policies subjecting all modifications to the scrutiny of an outside expert or another member of the firm. Also software security is enhanced by employing a software librarian, requiring passwords for access to sensitive programs and files or excluding them from disk menus. Access to the microcomputer itself should be restricted. There should be a strictly enforced backup policy to ensure that files can be reconstructed in case of a loss.

Businesses should have procedures that govern data input, processing, and output. Software is available that provides screen formats, which gives the user an outline as to what kind of information to expect. This software contains prompts and editing capabilities which determines what type of data (numeric or alphabetic) the user inputs and the order of inputs.

Control over microcomputers is possible. However, because the technology is so new, most firms have not yet developed the controls necessary to prevent or detect mistakes and defalcations. It is possible that many of the small firms are experiencing the use of computers for the first time; therefore, the knowledge of what controls should be in place is unknown. Thus, auditors usually cannot place much, if any, reliance on information generated by the micro and, therefore, must expand their substantive testing.



## **Microcomputers as Audit Tools**

The use of microcomputers as an audit tool has eliminated an enormous amount of "pencil pushing". The auditor now has more time to concentrate on making the important decisions every audit demands and to address the question of audit risk.

### *Audit Automation:*

The micro stores a client's financial information, prepares audit time and budget data, and generates trial balances, working papers, adjustments, and financial statements. Also, it ensures that all documentation is complete. The ability to quickly create the current year's trial balance, compare it to last year's and analyze any differences is only the beginning of what the personal computer can do for the auditor.

Instead of manually making adjusting and reclassification entries, the auditor merely keys the entries into the computer and it will summarize and post them automatically. This capability is invaluable for showing the effects of proposed adjustments to the auditor and the client. This allows the auditor to devote more time to the demanding areas of the audit, thus possibly reducing the audit fee to the client. Automated work papers can eliminate delays that would be inevitable with a manual audit.

A computerized audit time and budget report allows the audit team to record their time budget on the micro as the audit progresses. Comparisons of the actual time spent on the audit with budget time are available at any phase of the audit. This variance information can be useful in planning future engagements. The time budget is also useful in calculating the final fee, because it contains the audit member's time and hourly billing rate.

### *Audit Programs:*

These invaluable audit techniques are now available to virtually every CPA, thanks to the low cost of microcomputers and the wide range of software on the market. Off-the-shelf programs such as spreadsheets, word processors, data bases, and timekeeping tools are available

at reasonable prices. Software programs are available in hard coded or template format. Hard-coded programs are written in a formal language and are rigidly structured. The user inputs data on a formatted screen and receives output in a preformatted report. Some auditors prefer hard-coded programs because they are better at catching mistakes than template-based software. Also, modification of them is impossible. However, hard-coded programs take longer to run.

Template micro programs constructed on already-existing software, such as spreadsheets and data bases, provide more flexibility than hard-coded programs. The powerful spreadsheet, Lotus 1-2-3, is an example of a template program used by many auditors. A template can access commands of an underlying program; thus, the auditor might summarize and post adjusting entries by giving one command and the template does the balance of the work. It is easy to adapt templates to new needs, and they are faster than hard-coded software. They have fewer error-trapping capabilities; therefore, more knowledge and attention to details is necessary than with hard-coded software.

## **Auditing Functions**

### *Basic Audit Functions:*

The microcomputer becomes an audit tool once it is automated to do audit functions. The objective should be to continue to improve the effectiveness of the audit by improving planning and the analysis of evidence which reduces time and cost to the client. This means using spreadsheet, mathematical, statistical, and graphics software to plan engagements, analyze internal accounting controls, and perform statistical sampling and analytical review of the data collected.

One way to computerize audit planning is to design a general engagement program tailored to individual audits. Many CPA firms currently have a standard typewritten program that is easily transferable to the micro. The addition of procedures for specific industries generates the entire audit program in one assignment. To design a program that fits a specific

client, the auditor selects only the procedures that are applicable to that particular firm. The computer prints out a program containing the required procedures and additional ones selected by the auditor. The printout also includes a space for dates so that the auditor may initial procedures when completed. Usually, a space for handwritten comments is available. Thus, the auditor has benefits of a standardized program, an efficient planning program, and a plan that is neat and readable.

Microcomputers can help auditors in evaluating a client's system of internal accounting control. It is possible to computerize internal control questionnaires in a manner similar to that used with audit programs. Tailoring of individual programs based upon the client's size, particular industry, and the auditor's past audit experience is possible.

Other basic audit applications for the microcomputer are substantive testing and statistical sampling. The auditor can use a micro to randomly select an appropriate sample and to evaluate the results. Spreadsheets are invaluable for the calculation of financial ratio analysis, depreciation schedules, interest expense, prepayment analysis, income tax liability, and deferred taxes. Because these procedures are some of the last-minute tasks in an audit, the microcomputer is an invaluable aid.

### *Advanced Audit Functions:*

Many auditors now use their microcomputers in the ways discussed above. However, many CPA firms are using their micros to perform more advanced audit functions. Sophisticated computing techniques are being used to improve an auditor's decision making process and to enhance the scope of the audit. All of the techniques discussed above, as well as general audit software produced by CPA's, data bases, networks, and decision support systems are useful in performing advanced audit functions.

Decision support system programs assist auditors in making decisions during the audit engagement. An example is Arthur Andersen's Audit Software Application Development Aid (ASADA), which assists the CPA

in developing generalized audit software uses and tailoring the output format. The auditor responds to questions asked by the software program and receives guidance from the program. The software specifications and operating control statements are input into the client's mainframe, either at its physical location or by a telephone link. The mainframe then processes the program and prints the output or sends it back over the phone lines to the auditor's micro. This is much quicker than having the auditor devise the software specs and control commands. The decision support concept is useful in many audit areas, such as planning and controlling the engagement, determining the scope of the audit, studying and evaluating internal control, and creating and evaluating statistical sampling. Support systems assist the auditor in making decisions, but do not make the decisions.

Telecommunications allows auditors who have micros equipped with modems to access on-line private and public data bases and use that information to enhance and streamline analytical reviews. The transferring of working papers to the audit team's home office allows the partner in charge of the audit to quickly spot problems and to begin a personal review of the audit. Telecommunications are useful in operating generalized audit software programs on the client's mainframe. Telephone lines are useful in gaining access to the client's computer, thus enabling the auditor to upload audit software programs on the mainframe, and then have the results downloaded back to the micro and printed at the auditor's office.

#### *Future Auditing Developments:*

The use of the microcomputer to perform basic and advanced audit functions will grow rapidly. What lies beyond these sophisticated applications? One such development will be the use of the micros to continuously monitor the client's system of internal control and to create audit files from the client's data controlled by the auditor. Telecommunications, or some other method, would permit a continuous link with the client's computer. The client's data is then continuously

available for analysis. Because the auditor will need less time to perform auditing tasks, more time becomes available for analysis and decision making.

What is truly amazing about the microcomputer's impact on auditing is that it has occurred in such a short time period. Barely ten years ago, using the micro to assist on an engagement was completely unknown. What will the future hold for auditors and their personal computers? Computer hardware and software in the near future will shift toward the new super micros with multi-users, multi-tasking systems and hard-disk capabilities. The capabilities of the new models of micros is approaching that of the minicomputers. The capability of running different programs and handling more than one user simultaneously will be common.

The use of laser technology by auditors is just on the horizon. This storage device is available right now, but many CPA's find it too expensive. Laser disks whose contents are write protected are used to protect the security of macros. The computer will automatically ask questions that only the legitimate user can answer and will not allow any processing to take place if any of the responses are incorrect. Because of the mammoth storage capacity of the laser disk, all of the programs an auditor needs for an engagement will be on one disk. The programs are tailored to the personnel level by including only those programs each auditor requires for a particular audit.

Another future development (which is technologically feasible today, but too costly for widespread use) is networking through a building's electrical system. This elimin-



ates the problem of linking the audit team's micros to a printer or a kind of mass-storage device with cables. The auditor will be able to access a laser disk for information, process it, and print it out just by plugging in the equipment, regardless of the location of the auditor in the building.

Future developments also include improved versions of touch-sensitive pads to input information - especially handy for working with systems flowcharts - and voice-digitizers that will allow the recording of voice input on a disk. Also systems that will automatically save whatever is being processed every few minutes without interrupting processing will greatly enhance productivity. This will reduce time spent on manually saving work and reconstructing files lost because of absentmindedness. Finally, software development systems could go to expert systems that actually make decisions. These systems will not supplant an auditor's judgment; however, they will provide input in making decisions. An example is the PC Auditor software package that is new on the market. This program allows the auditor to perform comprehensive audits of critical applications of personal computers without the need for technical computer expertise. Once these systems are proven reliable, they could become an important part of the review process by requiring the auditor to justify any decision different from the system's judgment. It is possible that expert systems could provide a defense in lawsuits.

### **Implications for Auditors**

The immediate future will see an enormous degree of change in microcomputer technology, with corresponding developments in auditing techniques. What effects will the use of these computers have on the auditing progression? For one thing, the tremendous gains in productivity afforded by micros permits a smaller audit team. It is possible that the demand for auditors, especially in entry-level positions will decrease. This in turn could signal a drop in enrollment of students majoring in accounting.

Microcomputers have brought about a new educational need, however. Training of people to use them is necessary, and it is especially

vital that auditors learn how to use spreadsheets effectively, since they are the key to using a micro as an audit tool. This need for specialized knowledge will have a profound effect upon the power structure of CPA firms. Auditors must be able to deal with a microcomputerized audit environment. This ability will help beginning auditors to move up faster to a level where decision-making is more important than pure "pencil pushing" activities, because the personal computer removes a great deal of drudgery from auditing. Today, decision-making is the province of the upper echelon of the CPA firm. This situation will have to change, though, because the micro enables auditors in the field to take on more responsibility.

There will possibly be less need for seniors and managers in CPA firms because staff accountants will be better qualified. Upper and middle-level managers will have to delegate more and will have to be able to discern which decisions to handle in the field. They will have to be thoroughly familiar with the micro's capabilities to accomplish this successfully.

### **Summary**

Microcomputers have had, and will continue to have, a tremendous impact on all parts of auditing. Auditors will face new headaches when clients begin to widely use micros, because the auditor will have to audit around the computer. Yet, micros more than make up for this inconvenience when used by the auditor as an audit tool. As a CPA firm goes through the stages of using the micro the effectiveness and efficiency of the audit improves. The auditor is happy because more time is available to spend on the complex parts of the audit, while the client is happy because the productivity gained from using the micro means a lower fee for an examination of higher quality. The use of the microcomputer has implications for the future of auditing. There will be a need for fewer staff auditors, and a decentralization of power in CPA firms because of the "drudgery" time the micro saves and the decision-making time it yields. Future developments will only accelerate these trends. Although microcomputers have had

a profound effect on a great many vocations, it would be difficult indeed to find one that it has changed more than the field of auditing.

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