The EDP Impact on the Audit Approach
and the External Auditor's Evaluation of
Internal Accounting Control

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The advent of the Computer has had a tremendous impact on accounting profession, and this impact is even stronger in the field of auditing. In response to this technological development, specialized audit software has been developed, generally referred to as Computer-assisted audit techniques.

These audit techniques have been used since the mid-1960s when the Computer revolutionized the processing of financial data. As the operations of many companies became more Computerized, Computer-assisted audit techniques were accepted

systems modification.

However, it is recognized that currently there is a spectrum of technical knowledge and competency that is frequently beyond the capability of any one individual. Often, an audit requires the cooperative efforts of several professionals, each contributing to an audit team. This way the emphasis on one discipline or another can be shifted, depending on the technical demand placed on the audit team by the engagement.

Speaking of cooperation, also the external auditor and the internal auditor should work together to achieve overall audit objectives. Since the internal auditor is generally involved in a wide range of activities, it is desirable for the external auditor to make a determination of reliance on the internal auditor while both must evaluate the impact of the computer, the internal auditor is more involved in internal operation of the computer.

In this respect the cooperation between the external auditor and the internal auditor can generate the following advantages. First, modern EDP auditing calls for the external auditor's participation during the period of system development. For a large computer system, it is very expensive to make any significant changes after its implementation. Few external auditors have time or flexibility needed for system development. To overcome this problem, the external auditor should use the skill and flexibility of the internal auditor who will provide him with properly documented findings and evaluations for review.

Second, the use of generalized audit software is a popular way for the external auditor to carry out both compliance and substantive audit procedures. The first problem with the generalized audit software is the inability of many generalized audit soft packages to access complex file structure. The external auditor may ask the client's systems department for help by accepting the loss of independence. He may also request that the data be transferred to a simpler file structure to which the generalized software can access. But this is an expensive in terms of processing and storage costs, and there is no guarantee that file integrity will be maintained. A Simpler and more effective solution would be to work closely with the internal auditor who has the technical expertise and time available to solve file access problems. The second problem with generalized audit software is that all application programs of the client are updated to reflect changes being made. The external auditor will also need the assistance of the internal auditor to cope with the changed programs.

In auditing such advanced systems as on-line and real-time systems and destructive update systems, the feasible audit approach is to employ computer assisted audit techniques. Today the external auditor may choose from a simple test deck to a highly sophisticated tool such as parallel simulation. Advanced computer-assisted audit techniques, however, are technically difficult to implement and usually require a lot of research and

testing before they can be applied. The internal auditor generally has the necessary skills, time, and independence to implement these thechniques in a cost-effective manner.

Conclusion

Internal control is crucial to any business organization. Without the ability to ensure the accuracy and reliability of accounting information, a business organization could not survive in a competitive environment. Since independent auditors are charged with the responsibility of attesting to the reliability of public accounting information, the design and evaluation of systems of internal control have become important tasks of the accounting profession. [AICPA, 1972] [7] Therefore, the external auditor must understand each significant application processed on the computer, identify the unique general and application controls which exist in computerized environments and, based on this knowledge, perform analytical systems review and evaluation.

In the modern EDP system, the external auditor's study and evaluation of a company's internal accounting control will be affected positively by the presence of the internal auditor as an element of the company's internal accounting control systems.

7- Bailey, Andrew D., Jr., Duke, Gordon Leon, Gerlach, James, Ko, Chen-en, Meserry, Rayman D., and Whinston, Andrew B., "TICOM and the Analysis of Internal Control", The Accounting Review, Vol. LX, No. 2, April 1985, P. 186.

The strength of that effect, however, should reflect the external
auditor's assessment of the technical competence and
organizational independence of the internal auditor, and of
specific audit activities such as the EDP audit techniques used by
the internal auditor.

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as part of most large audits by the end of the 1970s.[1]

While being of a great help, modern Computer technology presents new problems to the auditor in his evaluation of internal accounting control for audit purposes. It can create new exposures to errors and irregularities. However, some new methods can be used to cope with these problems. Recent advances in decision support systems indicate that the speed, accuracy, and memory capacity of computers may be used to aid auditors in this task.

In this paper, while trying to present the importance of the internal audit function, the emphasis is given to the EDP impact on the audit approach and the external auditor's evaluation of internal accounting control. The paper continues with emphasizing on the fact that a proper cooperation between the external auditor and the internal auditor should exist so that the external auditor performs a study and evaluation of a comany's existing internal accounting control contemplated by the generally accepted auditing standards.

Change in the External Auditor's Audit Approach

Auditing has traditionally emphasized the verification of records, controls, and the adequacy of controls in manual systems.

1- Westphal, Robert, "The Profession-Meeting the Computer Challenge, "The Charered Accountant in Austrailia, July 1983, P. 46.

Auditors could directly observe transaction processing, recordkeeping, and the preparation of reports. The verification was performed manually from ledgers and other written documents. Then, the advent of electronic data processing has had a major effect upon auditing, due primarily to the absence of a visible audit trail in Computerized systems. More specifically, Computerized data processing systems maintain files on media that are machine readable, such as magnetic tape or disk. File Content may be printed out infrequently or at irregular intervals. A history of the activity relating to each individual file may not be maintained. In on-line processing, even a printed record of input may not be produced.

The early stage of business automation typically involved single-function application systems such as payroll. These systems ran on a batch or sequential basis. Batch Controls were usually computed by users and by data processing personnel to verify subsequent steps. After each step, there were manual checks to ensure the accuracy and completeness of processing. If errors were found during processing, processing was suspended until errors were resolved.

The first reaction of auditors to the use of computers in data processing was to attempt to perform their audits with the printed records and outputs provided by the system, ignoring the computer and its programs. This approach was referred to as

auditing "around" the computer.[۲]

In auditing around the computer the auditor needed a little Knowledge of electronic data processing. This was a reasonable approach in which they assumed if a sample of system output was correctly obtained from system input, then the processing itself must be reliable. However, as Computerized data systems became more complex, and resulted in more disappearing audit trail, the approach of auditing "around" the computer became discredited.

As a result of the rapid development of computer technology, the application systems have evolved into a more complex situation. Instead of the Computer being a user-support tool, it has now become an integral part of most business and government organizations. The modern EDP System in a large organization is characterized by on-line and real-time applications in a distributed communication network. The principal effect of the modern EDP system has been a drastic shift in internal accounting control emphasis. The emphasis has changed from people and procedures to softwares in operating systems and data base management systems. That is no surprise why auditors are interested in the software in a real-time system. Because they are concerned that all programs provide the degree of internal control necessary to the system. "Three major internal control

2- Barry E. Cushing. **Accounting Information Systems and Business Organizations**, 3rd. Ed. (USA: Addison-Wesley Company, Inc., 1982), P. 454.

considerations in a real-time system are data reliability, security, and provision for an audit trail". [3]

In the Modern EDP System, one of the accountant's primary control tools, the principle of batching, is lost in a real-time system because transactions are processed individually rather than in batches. This can create a problem in consistent application of internal accounting control procedures. One aspect of a real -time system which is useful for control purposes is that data verification is done by the person in the system who is in the best position to verify source data accuracy- the operator who originates the source data.

Some Companies have installed stand -alone miniprocessor systems in several departments that are not integrated with the data center. This creates another problem- users performing the data processing functions. This can be a very undesirable situation from the standpoint of segregation of duties and responsibilities, a basic tenet of sound internal accounting control.

One of the major problems of security in a real-time system is the prevention of unauthorized access to the system. In a conventional system, most or all of the data processing equipment is concentrated at a single physical location, so that control effort can be focused there. In a real-time system, since a large number of users have access to terminals at several remote locations and

3- Ibid., P. 268.

share the same data stored in the central site, the problem of unauthorized access is greatly magnified. The most Common approach to this problem is to assign each person authorized to use the system a code number that is checked by the system software prior to allowing a user to have access to the system.

The problem of maintaining an audit trail is also greatly magnified in a real-time system. In some situations, visible source documents are eliminated, certain historical records are neither available nor necessary, and other records are available in machine-readable forms only. This Change in the traditional audit trail significantly affects the way the auditor evaluates a computerized system.

The Evaluation of Internal Accounting Control in the EDP System

The most significant way in which the computer affects the audit is in regard to the auditor's study and evaluation of internal accounting Control.

The Auditing Standards Executive Committee suggests a two-way classification of data processing controls: "Some EDP accounting control procedures relate to all EDP activities (general controls)and some relate to a specific accounting task, such as preparation of account listings or payrolls (application control)". [4]

4- Ibid., P. 428.

They are, in turn, related in two ways. From audit standpoint, the most publicized relationship is that the degree of reliance an auditor can place on application controls depends on the strength of general controls. The second relationship is that the existence of certain general controls facilitates the study and evaluation of application controls.

Review of General Controls

General Controls involve policy and procedures. Among the most critical general controls are organization controls, documentation standards, data security procedures, physical protection of computer facilities, reviewing, testing, approving and changing systems or programs, and hardware controls. Organization controls are very important in the structure of internal accounting control because of the great concentration of data processing duties in the EDP department. They fall into two categories: the placement of the EDP function within the organization and the division of duties and responsibilities within the EDP department.

Within the organization, the EDP department should be functionally independent in its relation to other departments. This independence should include a separation of responsibilities which results in a system of checks and controls throughout the organization. However, controls must be flexible enough so that the EDP department retains its service nature to all other

departments within the organization.

Within the EDP department, there should be a proper division of duties so that to minimize opportunites for manipulation. For example, there should be a clear devision of authority and responsibility among the following functions:

1- Systems analysis and programming,

2- Computer operations,

3- File library and

4-data control.

After reviewing organiztion Controls, the auditor should be concerned with the procedures for documenting, reviewing, testing, approving, and changing system or programs. Documentation is very important in internal accounting control; a good documentation is an important asset to the efficient operation and control of a computer-based accounting system. Good documentation is particularly important in view of the high rate of turnover among systems analysis and programmers. Ideally, the company should use its own manual of programming standards which details documentation requirements. Details of documentation will assist the auditor in developing meaningful tests of the system if he audits through the computer. During his review of the documentation, the auditor must recognize those program features which perform data editing functions. These functions test the data for reasonableness against known possible conditions. If possible, such checks should be built into the

program by the system designer.

In order to review, approve, and change systems, it is a desirable practice to have an EDP -Systems- Planning steering committee composed of an executive group in an organization.[5] This committee should establish guidelines for the development and implementation of system projects and appropriate documentation for management summaries; it should review procedures at each decision point in the development and implementation process.

Program testing and program modification procedures are also important. In fact, the procedure for modification should be the same as for new programs.

Since good modification procedures are well worth the effort involved, the auditor should direct management's attention to their absence.

Review of Application Controls

Application controls are those that relate to specific processing jobs as they are performed at the computer facility. They involve the inputs, processing, and output controls. They include batch totals, source data controls of various kinds, programmed input validation routines, control over the errors and exceptions

5- Porter, Thomas W. and Perry, Williams E., **EDP Controls and Auditing**, 4th Ed. (Kent, 1984), P. 161.

revealed by other controls, checkpoint/restart recovery procedures, and online data entry controls.

Batch totals are as essential to computerized batch processing as they are to manual data processing. Three forms of batch totals are very common: financial totals, hash totals, and record counts.

One special form of batch total is the cross-footing balance test. This can be performed only on a set of data that is additive horizontally as well as vertically. Source data controls and input validation routines include a number of checks on the accuracy and completeness of computer input prior to processing. Among others, key verification, check digit verification, sign checks, limit checks, and field checks are worth to mention.

Finally, output controls are established as checks on the accuracy and propriety of the information processed. These methods include control totals, sampling, and prenumbering.

Coping with the Changing Environment

Developments in both hardware and software systems require a continual updating and strengthening of the technical expertise of the auditor who works with his clients' EDP systems. For instance, the increase in file integration and the introduction of new techniques, such as those used in data base systems and real-time systems, are quickly making it impractical for an auditor to limit the review of internal control to reviewing manual procedures for capturing and transmitting data. Increasingly

controls are being built right into programs themselves, so the auditor must be able to understand, evaluate and use these control techniques.

An auditor's familiarity with EDP systems should include, at a minimum, the following:[6]

1) A basic understanding of computer systems and their general capabilities.

2) A basic understanding of widely used systems, both hardware and software.

3) A general familiarity with file processing techniques and data structures.

4) Sufficient knowledge to use standardized, packaged audit software.

5) The ability to review and interpret systems documentation including flowcharts and record definitions.

6) Sufficient working knowledge of basic EDP Controls to identify and evaluate the controls in effect in a clients' system, to determine the extent to which such controls should be tested and to evaluate the results of such tests.

7) Sufficient knowledge of EDP systems to develop the audit plan and supervise its execution.

8) A general familiarity with the steps involved in program and

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6- Jancuare, Elise G., "Profeciency levels for EDP auditors", **Journal of Accountancy**, Feb. 1981, P. 38.