Problems of Auditing Computing Data:
Internal Audit Practice and External Audit Theory

These two papers discuss some of the auditing problems which are beginning to confront industry and commerce as computers take over the control of integrated data-processing systems. Under such control many of the manual safeguards against fraud will disappear. This change will affect the methods of external and internal audit. Some answers to the problems raised are provided in the papers, which were originally presented at the First Conference of The British Computer Society in Cambridge on 23 June 1959.

Section 1: Internal Audit

By T. R. Thompson

The aims of an Audit and how it may be approached

(*a*) *Aims.*—The fundamental aims of an audit are to make sure that the office records present a true picture of the activities of the enterprise and of the present situation. This means that the audit must make sure

  (i) that the office procedure is satisfactory;
  (ii) that there is no fraud;
  (iii) that it is being carried out accurately.

(*b*) The approach to the audit may be made in one or more of several ways:

  (i) by examining the results and checking back to the original data;
  (ii) by examining the data and checking that the correct results have been obtained;
  (iii) by examining the actual procedure carried out and checking that it is being carried out correctly, i.e. by the time-honoured method of ticking;
  (iv) by examining the reconciliations and checking that the results are self-consistent;
  (v) by examining the nature of the procedure carried out to make sure that it is sound for its purpose and contains adequate checks for self-consistency and reconciliation of the results.

Procedure that is to be carried out

Before computer programs are prepared it is imperative, if a sound job is to be done by the computer, that the requirements should have been defined very carefully, and a specification drawn up to show how the data will be organized and how the computer will do its job. The existence of such a specification is of tremendous advantage to the auditor.

In orthodox systems such specifications are seldom available to the auditor when he starts on an audit. He usually has to find his way through the system and determine for himself what it is supposed to do. Clearly, with such an arrangement there is a great danger that the auditor will accept the system as he finds it. On the other hand, the specification prepared for the computer can be reviewed before the start of the audit to make sure it appears sound in itself and then, as the audit proceeds, he can make sure it is still appropriate to current circumstances.

It is sometimes asked whether the auditor should vet the computer specification before the job is put into operation. If this is convenient it certainly should be done, just as it should be vetted by anyone else who is concerned with the system. On the other hand, I do not think a fetish should be made of this if it is not convenient to get his agreement beforehand. We ourselves have never received criticisms of a specification from an auditor before it was put into operation, though sometimes afterwards a few suggestions have been made.

The main interest of the auditor is, I think, in the provision of consistency checks, and in a good program these are all well provided for. This is because, in the early days of computers, programmers were largely recruited from people experienced in doing mathematical computing with desk machines. Anyone who had any experience of such computing will know how often errors occur in it. Consequently checks are imposed on the work at all stages. This practice has been continued in the preparation of commercial programs.

Possibility of Fraud

The possibility of fraud lies partly in the falsification of the data presented to the office system, and partly in wilfully carrying out the wrong procedure and so falsifying the results. As far as the results produced by the computer are concerned they can only be falsified if the computer is made to carry out the wrong program. Theoretically this can be done, but it would be very difficult, even for a skilled programmer. It is true,

generally speaking, that with a computer there are fewer people who need to be involved in collusion in order to achieve a fraud, but the collaboration would need to be very close and very carefully planned. Almost certainly the falsification would have to apply, not to one or two items in a procedure, but to all in a given run. This would make the risk of detection very great.

My own view is that, in practice, the chance of using the computer fraudulently is negligible. Anyone seeking to defraud could more easily do this by falsifying the data. The computer program should provide checks on the consistency, but this could only be carried to a limited extent, and anyone wanting to defraud would probably find ways to get round such checks as there are.

In orthodox systems data sheets are scrutinized by other people while the job is being done, and so fraudulent entries are much more likely to be detected than later, when the data is being fed to a computer. For this reason the auditor of a computer system will be most concerned with the audit of the data.

Reconciliation Statements

It should be realized that a computer produces much more accurate results than does an orthodox office system, even when the work of the latter is checked. The number of errors an auditor is likely to find is, therefore, very much fewer. Apart from this the computer can be made to check itself to a much greater extent, with little or no extra cost, by having many more reconciliation statements.

Because these reconciliations are produced regularly day by day or week by week for each run of the computer, the auditor can examine the trend of each figure on them and, whenever a significant change is detected, the reason can be sought to see that it is fully justified. An examination of this sort can enable the auditor to find out if the work is accurate, and will bring to light any significant fraud.

Individual Checking

Although with the computer system there are no records of the procedure which the auditor can follow through and check, he can still carry out the procedure for himself in those cases where he wishes to make sure that the computer has obtained the right result. The auditor will, first of all, want to choose any items with abnormal results, but he also will want to pick out items at random, by some statistical sampling process, so as to be sure that an adequate check is being made. By this means he can satisfy himself that, in general, the correct procedure is being carried out and that there is no fraud of any magnitude being perpetrated.

Changing Circumstances

In all matters of accountancy and administration, the danger of inadequacies creeping in as circumstances change must always be present. This is equally true of computer programs. Up to the present this problem has not been met because everyone is strongly aware of the need to be informed of the circumstances and to take appropriate action. As programs settle down, however, and as changes in programs become more commonplace, this will no longer be the case. The auditor will fulfil a valuable function if he detects the need for bringing programs up to date. If he examines the specification when he starts the audit he will see if it has been modified since the last audit. If so, he can make sure that the modifications have been properly incorporated in the computer program. If any change in program has been made without a change of specification, this will quickly be detected by the random-sampling checks.

During the audit, care should be taken to see whether there are such changes in the nature of it to indicate a change in circumstances to justify a change in procedure, and therefore in the computer program.

Section 2: The External Auditor and Computers

By F. Clive de Paula

Introduction

At the outset, we should note a benefit that the computer should bring to the auditor, whether internal or external—namely, the greater likelihood of accuracy in the accounting process. Human clerks get tired and become more prone to error, whereas the computer can be expected to work longer hours with less likelihood of careless or slovenly work. Once the procedures have been laid down in the computer program, there is a greater probability of identical procedures being followed

than there would be if a number of individual clerks were concerned. This greater probability of accuracy and of identical procedures means that a smaller test by the auditor is likely to prove the correctness of a greater volume of transactions.

Next, we must realize that the introduction of a computer does not in any way affect the value to the auditor of vouching original entries. The need for that vouching remains unchanged, and the method of doing it is unlikely to alter. In fact, the possibility of reducing the