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Automated Data Processing - Part II

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AUTOMATED DATA PROCESSING— PART II

The author traces a very simple accounts receivable application from a manual operation to a punched card operation.

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In this segment, we will trace a very simple accounts receivable application from a manual to a punched card application.

The manual system works in this manner — the sales invoice is entered in the sales journal and the accounts receivable ledger is updated daily; the sales journal is accumulated and at the end of the month it is totaled and posted to the general ledger. The cash receipts are entered in the cash receipts journal and the receipt of cash is posted daily to the accounts receivable ledger. The cash receipts journal is accumulated and at the end of the month it is totaled and posted to the general ledger. The balance in the accounts receivable account in the general ledger is checked against the balance of the accounts receivable ledger. If it is in agreement, the statements are prepared and mailed to the customers.

Design

A mechanical punched card installation presents both problems and advantages. Each type of card must be carefully designed. The card is arbitrarily divided into fields. These fields are merely consecutive columns reserved for storing a specific unit of information. The length of a given field varies with the size of the unit of information it contains — it can be as small as one column or as large as 80 columns. If one field is to record customer numbers and there are less than 10,000 customers, four columns (9,999) would need to be reserved (only numbers, not commas, are punched).

It is necessary to determine what information is to be recorded on various types of cards and where this information should be placed on the cards. A major basis for assigning fields is convenience in transcribing data from the source document to the card. McCarthy states, "An operator usually tran-scribes data to the card starting in the upper left corner of the source document, then across and down, following the characteristic mode of reading. Thus name or other identification fields frequently are found on the left side of a card, and specific quantities and dollar amounts are found on the right side."[4] Since machines analyze by columns without regard to what is in them, the same columns must be used for specific fields.

Procedures

After the cards are designed, the following procedures could be used.

1. A master card is prepared for each customer's account. This master card will contain the name, address, customer's account number, and other desired information.

2. Detail cards are punched on the key punch and verified on the verifier. This detail card will contain the customer's account number, the description, the quantity, and the price. If a calculator is included in the unit record equipment, the punched cards can be inserted in it and the calculator will do the multiplication and punch the total on the same card; or quantity could be multiplied by price before key punching and inserted on the card by the key punch operator.

A check can be provided at this point. A total can be taken of the number of units sold per shipping orders and a grand total of all units sold established. The detail cards can be run through the tabulator with printing suppressed and the quantity sold field added. These totals must agree.

3. Each day the master cards are merged with the detail cards on the collator. The new deck is run through the tabulator and, by using the proper control panel, a sales journal

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[4] E. Jerome McCarthy and J. A. McCarthy, *Integrated Data Processing Systems* (New York, New York: John Wiley & Sons, Inc. 1966), p. 90.

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with one line for each customer, as well as total credit sales, is printed. If the invoices are to be prepared by the accounting machine, the same deck can be run through the tabulator (with a different control panel) with invoice forms inserted on the accounting machine. If the reproducing punch is connected to the accounting machine, summary punching can be done as invoices are being printed. The machine will print whatever is on the cards and whatever was programmed by using the control panel. Upon completion of the invoice run, the total units invoiced are checked against the previously established grand total of all units shipped. If the totals agree, the invoices are mailed to the customers.

4. The decks are then separated by using a sorter; the master deck is filed, the summary deck merged with the accounts receivable deck, and the detail deck used for inventory deletion.

5. A detail card is punched for each cash receipt ticket. Each card must contain the customer account number as well as the amount of cash received.

6. This detail deck is merged with the master deck in the collator. The new deck is run through the tabulator; by using the proper control panel, a printout is obtained. This printout or cash receipts journal contains one line for each payment as well as total daily receipts.

7. The decks are then separated by using the sorter. The master deck is filed and the detail cards merged with the accounts receivable deck.

8. To balance the accounts receivable for the day, the accounts receivable deck can be run through the tabulator with printing suppressed. Receipts are noted by a special punch, so that all sales are added and receipts subtracted from beginning balances. If the control panel is properly wired, the printout will contain totals of beginning balances, sales, receipts, and ending balances. These may be checked against the sales and cash receipts journals previously prepared by the tabulator.

9. At the end of the month, the sales journal and the cash receipts journal can be totaled and posted to the general ledger.

10. To prepare customer statements, the accounts receivable deck is merged with the master deck and run through the tabulator.

11. A printout can be prepared for an accounts receivable ledger. Cards can be punched by the reproducing punch with a new beginning balance.

By-Products

Innumerable modifications could be intro-duced and procedures could be extended. The original sales detail cards could be duplicated in the reproducer and the duplicate deck interpreted by the interpreter. This deck has many uses. It can be sorted and re-sorted to yield analysis of sales by product, territory, salesman, or in any combination that is useful to management. It is possible to prepare the sales invoice on a typewriter and have cards punched at the same time.

Whether a manual or a punched card system is used, a major purpose of the accounts receivable application is to keep an accounts receivable ledger and to provide information for customer statements. However, the punched card system does more. It is an integrated system. Information once captured on a card is used many times. Information required for one system is also required for another system. For example, the quantity of items ordered by a customer is required not only in the customer order and billing system but also in the sales information and in the inventory control systems. If the data required for more than one system can pass automatically from one system to another — in this example, from the customer order and billing system to the sales information system and to the inventory control system — the system is said to be integrated.[5]

In a narrow sense, the many sales, inventory, and other management reports may be considered by-products of the financial record-keeping system, since the same cards are used to produce all the reports. In a larger system, however, assisting operating management in its decision-making justifies an integrated punched card data processing installation. Reports can be made available that were previously considered impractical. Moreover, these reports are available weekly and even daily — management can see problems in time to correct them. In today's competitive business world, it is hard to overstate the advantages of knowing your problems in time to take action.

An integrated system also does more. It tends to lower the fences sometimes raised between the traditional functional areas of business. Accounting is drawn together with sales, finance, and production so that each can better serve and work with the others. In other words, integrated data processing helps integrate management.[6]

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[5] Beryl Robichaud, *Understanding Modern Business Data Processing* (New York, New York: McGraw-Hill Book Company, 1966), p. 169.

[6] McCarthy and McCarthy, *Integrated Data Processing Systems*, p. 263.

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the production function may include a profit indicator for the function by translating production quantities into potential sales dollars at list price and by applying a parameter representing the variable margin rate.

Summary

A review of budget and control philosophies provides a frame of reference for an examination of the contributions of statistics and accounting to the development of performance standards. Certain reported experiments are of interest to the would-be builder of performance models. The control chart furnishes a logical control model. Control charts, based on the properties of a normal curve, serve as devices for identifying significant deviations from adopted norms. The plotting of performance values on such charts allows an immediate visual evaluation of performance against an adopted standard; significant deviations may be noted as values outside the control limits or as part of a non-random trend developing within the limits. The adopted standard should provide a realistic norm for the measurement of subsequent performance; any adjustments to an experienced norm should have a basis in fact in order that the usefulness of the control mechanism may be maintained.

OBSERVATIONS REGARDING WOMEN IN PUBLIC ACCOUNTING

Extremes

Sometimes, women accountants have found themselves in the unfortunate position of being asked to do clerical work unrelated to accounting; for example, to type, operate the Xerox machine, or relieve the telephone operator, none of which are professional employment. The young lady finding herself in this position has the problem of educating her employer. Perhaps the most effective argument is to show that she is no better at typing or xeroxing than her male cohorts.

Conclusion

A summary of the problems faced by the woman in public accounting prepared by anyone else in the profession could certainly differ from those outlined here. The important thing is that in airing these problems we can identify the real ones and, hopefully, develop solutions to them.

AUTOMATED DATA PROCESSING

Summary

In a manual bookkeeping system, information is recorded many times on different forms and in various journals and ledgers. With punch card machines there is far less manual copying and recopying of data; therefore, there are likely to be fewer errors. Once data is punched in a card and verified, the information can be stored efficiently and permanently. It can be sorted, merged, reproduced, and printed on many reports. The punched card, containing all of the details of a complete transaction, is the basic building block for a punched card data processing system. Detailed customer cards showing purchases can be used for daily sales reports, for customer invoices, for customer statements, and for inventory reports. Not only can they be used to produce basic documents, but they can be processed in many ways to produce summaries to bring current information to management.

It is possible then to develop a partially integrated system with punch card machines. Although they have definite machine limitations, they still offer significant advantages over manual systems. Many small- and medium-sized companies find these machines both useful and economically feasible; but as the cost of computers continues to decline, many firms will probably shift to electronic equipment.

The next installment of this series will deal with electronic equipment.