

CHAPTER VIII

DATA PROCESSING

Data processing is the recording and processing of the information necessary to a business. A data-processing system consists of the methods and equipment used to record and process such information and should provide for urgent and exceptional situations, as well as normal ones. Many methods exist from simple paper-and-pencil methods to complex automatic, electronic, and integrated data-processing systems.

Each system collects information and carries it along to its prescribed destination. In general, interest has increased in automatic data processing. New automatic devices are constantly being devised that have wide application to almost every business operation, and executive ingenuity is busy organizing management procedures to take advantage of the revolutionary techniques and to integrate them within those organizations that can profit from data processing.

Computing systems

Basically, there are three different data-processing systems. They may be classified as (1) mechanical-processing systems, (2) punched-card systems, and (3) electronic systems.

The simplest type is the mechanical-processing system. It includes all those machines that individuals must operate. Adding machines, calculating machines, billing machines, and similar equipment fall into this category. For small businesses and for some large business operations these devices are very useful. At one time, they were the only mechanical-computing devices available.

A second type of data-processing system is the punched-card system. With this equipment, information is registered by means of small holes punched on a card. Printed information is commonly placed in punched-card form by an operator at a semi-automatic machine called a key punch. When the operator hits a key on the keyboard, which resembles that of a typewriter, a positioned hole is punched in the card instead of a letter or number. Cards can be automatically punched when the information comes directly from an electronic computer system. Other machines can sort and do arithmetic calculations. The results can be printed on paper or punched into answer cards. The "language" of punched holes differs from that of letters and numbers in appearance, but the conversion from one to the other by association of the position of the holes on the card and by combinations of holes is quite simple. A variety of machines has been developed for sorting, tabulating, computing, and printing from information recorded on punched cards.

The most advanced type of data-processing system available to business is the electronic system, which is usually referred to as the computer. Since electricity moves at almost the speed of light, these machines are capable of performing operations at amazing speeds and have revolutionized many business operations. In the decade since the first modern electronic computers went into operation, they have become an integral part of the equipment for large business firms and the natural and social sciences. There is also good evidence that medium- and small-sized companies can make profitable use of computers. Within the last few years, many of these smaller firms have replaced punched-card systems with transistorized computers.

Programming

Programming is the most difficult part of running a computer. After the machine has been programmed, running it is essentially a simple operation of pushing buttons. However, no thing can be done until there is a correct program in the machine. As already mentioned, the instructions must be given to the machines in complete detail. A program consists of a sequence of steps that fully describe how a particular operation is to be performed. Many hours may be spent in developing a program and making sure it works properly. Complex problems require programs that cost

thousands of dollars to develop. In fact, -- the activity of programming is so specialized that people may spend many years learning all the techniques involved.

Data-Processing Centers

Many firms have a need for automatic data-processing equipment but do not have a large enough volume of work to justify an installation. To take care of this need, many data-processing centers have been established throughout the United States to perform jobs on a shop basis. Business firms can bring their technical problems to the centers and have specialists handle the complicated work for them.