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*The number of ways to use a data processing center are almost unlimited—and the price is reasonable. Still, there are criteria which should be applied before making the decision. Here are some of them —*

## SOME SPECIALIZED USES OF DATA PROCESSING CENTERS

*by David Coleman  
and Theodore Cohn*

*J. H. Cohn & Company*

**T**HE DAY after the close of each work week a contractor has up-to-date payroll data for comparison with job estimates. By using punched cards already prepared



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by the builder for which it is an agent, a real estate organization gets monthly reports on the status of sales commissions for contract follow-up and evaluation of salesmen's performance. A phonograph record manufacturer mails its royalty statements within two weeks after the close of a period. A supermarket chain has cut two weeks off the time needed for preparation of monthly operating statements.

These are just a few of the ways in which our clients are using outside data processing centers—at a cost, in each of these four cases, of between \$2,000 and \$3,000 a year. The services that can be provided by these centers go far beyond the familiar ones of payroll preparation and analysis of sales statistics. It is possible to process at a service bureau all the paperwork required from the receipt of a customer order through shipment, invoicing, and updating of accounts receiv-

able; from a bill of materials explosion for purchasing through production control schedules, costing records, maintenance of accounts payable, and updating of perpetual inventory records; from cash receipts and disbursements ledgers through the posting of the general ledger.

More and more businesses are utilizing this type of service, as is evidenced by the growing number of data processing centers. In the greater New York area alone there are now more than 75 of them (including banks and private computer users selling excess time on their equipment). The accounts serviced run the gamut from giant corporations using the centers as supplements to their own EDP installations to small retail stores equipped only with adding machines.

Although data processing center customers vary widely in size, this

service is particularly suited to the needs of small and medium-size businesses without computers of their own. Particularly appealing to this group is the fact that it is not necessary even to prepare punched cards as data processing input. Other types of input media, such as punched paper tape, optical scannable type font, and magnetic strip ledger cards, can be produced on comparatively inexpensive office machines as a by-product of normal daily office operations. By sending these by-product input media to a data processing center, a small business can give its management timely, up-to-date data.

This is not to imply that electronic data processing is the panacea for all office problems. One cannot simply "push a button" and have all the answers. With proper planning and individual programming of computer applications, however, many managements can use service centers to improve the reports on which they base their decisions.

**Applications**

When should a data processing center be used? The key factors in the decision, of course, are the needs of management and the costs involved.

For an adequate cost analysis it is necessary to know the dollars now being spent on the clerical operations that will be taken over by the data processing center. Without this knowledge there is no yardstick for judging whether there is a dollar saving in using the service.

Information that is derived from one source document and then is used for different purposes such as payroll writing, labor distribution, cost accumulation, and payroll tax preparation can often be processed more economically at a data center. This would not be true, however, if the payroll were small or if there were few products and few manufacturing operations. Future expansion of work load is an

important consideration; typically, additional volume can be handled by the data center at a small increase in service cost—less than the cost of adding more personnel to handle the same work in the customer's own office.

Often, however, management will elect to use a data processing center even when little or no dollar saving is expected. Improving the speed and accuracy of reporting may be the determining factor. Management's needs are an even more important consideration than costs. If management has accurate information in time, it can make decisions and take corrective action quickly. The key question, then, is this: Will the use of a data processing center help the business operate more effectively?

**Suitability**

Following is a list of some of the more important data processing jobs for which use of a service bureau is frequently suitable:

*A. Accounting Applications*

1. Payroll
2. Accounts receivable
3. Accounts payable
4. Sales records and reports
5. Cost accounting
6. Commissions and royalties

Depending on volume, these reports can often be generated more rapidly and more economically by computer than by manual processing.

*B. Management Guidance Applications*

1. Production control
2. Production planning
3. Inventory control
4. Operations planning

These more sophisticated data processing applications help management to make decisions such as these: How much of Product A should be produced next month compared to Product B? Can the production cycle be reduced? Can inventory be turned over faster,

AVOID  
BUSINESS  
DEALINGS  
TODAY



One cannot simply push a button and have all the right answers.

**Normally, the data center will provide a systems man to aid in planning. . . .**

and can inventory investment be reduced? How can customer relations be improved? The desirability of computer processing for these applications is difficult to evaluate in terms of dollar costs; instead, managements must weigh their usefulness in improving operations.

*C. Research, Technical, and Engineering Applications*

1. Market research
2. Opinion polls
3. Analysis of research figures
4. Engineering problems

These are usually one-time analyses that seldom justify installation of an in-house computer. Use of outside data processing services is frequently helpful.

**Selecting a center**

The company considering the use of a data processing center should get in touch with several in its immediate vicinity. The major criteria to be used in selecting a center are these: type of service of-

fered, experience of the center's management personnel, equipment used, the type of input media that can be processed, and the approximate costs involved.

It is well to bear in mind that the biggest expense at any center is the initial preparation of accurate input data. If this function can be performed in the offices of the company itself under proper control, the cost of the processing will be greatly reduced.

One of the big breakthroughs in internal preparation of documents has been the development of the adding machine equipped with a conventional paper tape that can be converted into machine language through an optical scanner. Because the tape can be read by the operator, it is simple to correct entry errors.

Here are some other questions that might be asked: Is the company's office equipment compatible with that of the data center? Occasionally, existing office machines can be converted or adapted to make them compatible. Can the center meet management's require-

ments for report preparation on a timely basis? How will the source data be transmitted to the center, and how will reports be returned to the company? Does the center have its own control section for checking the input data to be processed with the final report? Does the center have systems personnel who can work with company personnel and consultants? Finally, what is the center's reliability record in its work with other customers?

**Internal control**

Normally the data center will provide a systems man to handle the detail work in planning. He will work with the company's executives, employees, and consultants in determining the reports required and the sources of information and in deciding how the processing is to be done.

The major pitfall in most applications is lack of internal control over documents and data forwarded to the data processing center. Source errors result in schedul-

Questions to be asked: Can the center provide reports on a timely basis? How will source data be transmitted to the center? How will reports be returned? What is the center's record with other customers?





ing difficulties, in report errors, and eventually in top management distrust of any machine-prepared information.

The establishment of internal controls to check the results is also mandatory. There are several possible ways of checking results, including number control of documents, totals of dollars and/or units of the documents, hash totals of document numbers, and batch control of small groups.

There should always be a short period of parallel operation when the processing is performed by the company in its original manner as well as by the data center so that the results can be verified and the system modified where necessary. This procedure adds some initial expense but pays dividends in the long run.

Despite all this care, there will always be problems at the beginning. The executives of the company must be made aware that the first few reports will almost certainly be subject to some operational bugs. There must be enough time allowed to evaluate and cor-

rect each of the problems properly.

In a number of cases our management services department has been able to help companies solve data processing problems by the use of a service bureau. Some examples follow.

### ***Payroll analysis***

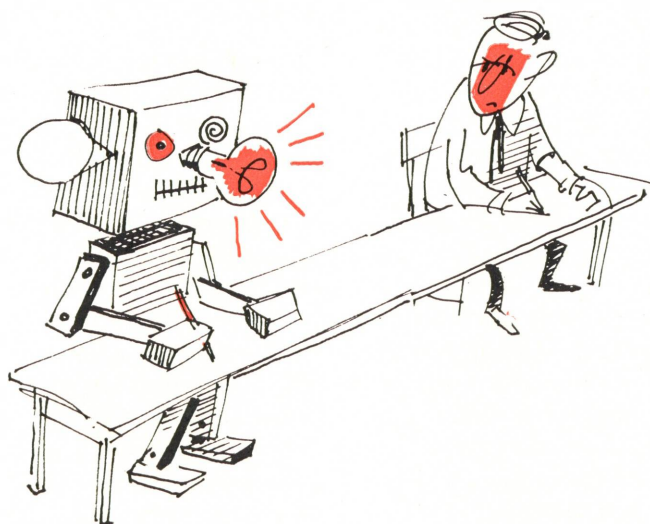
How to get accurate, up-to-date cost information for analysis as soon as the weekly payroll was completed was the problem of a medium-size masonry contractor. The contractor had a field staff that fluctuated between 90 and 200 men. Many of the tradesmen were switched from one job site to another in different counties and were paid different union-regulated hourly rates for the same trade. They also might work on different cost centers within one job site. The payroll had to be distributed to the employees on the day following the close of the work week.

Management wanted actual payroll costs analyzed weekly by job and cost center so that comparisons could be made with the original

job estimates. Completion costs to date could then be evaluated on an exception basis by spotting unfavorable ratios of costs to productivity. Field superintendents would be notified to take corrective action.

Timing had top priority in this case. The timing problem was complicated by the fact that there were no data processing centers in the immediate area. We recommended that the source information—payroll card data—be transmitted at the end of each work week via an IBM 1001 Data Transmission Unit from the client's office to a data processing center in another city that was capable of handling this type of work. The 1001 converts card perforations into electrical impulses that are relayed over leased telephone wires to an IBM keypunch receiver. The receiver automatically reconverts the signals into punched holes in a standard card.

Arrangements were made for the data center to process the work during the night. By 8 o'clock the following morning the computed



There should always be a short period of parallel operation as a safety factor. This allows results to be verified, and the system to be modified if that should become necessary.



As the number of titles grew in a phonograph record company, manual methods of data accumulation became increasingly cumbersome.

individual pay slips and the cost reports were forwarded to the company by bus. The pay slips were taken to the local bank for cash stuffing and then distributed to employees in the field. At the same time management received payroll cost reports for immediate analysis. The data center also captured on the punched cards all the data required for monthly union reports, quarterly 941 Federal withholding reports, and year-end W-2 Federal employee income tax withholding reports. The cost of this service was about \$3,000 a year.

#### ***Sales commissions status***

A real estate company was a sales agent for a large building developer with an international sales force. Each month the developer supplied the agency with a detailed tabulated listing, produced by a computer, showing the status and activity of all contracts. On the basis of this tabulated listing, manual postings were made to individual contract cards showing commissions paid in the current period and commission balances still open. These contract cards were manually analyzed monthly

for management reports. The identical information was shown on the tabulated report in a different format and sequence.

We recommended that the manual postings be eliminated and that the internal records and reports be processed by a data center. We further recommended that the punched cards that were originated and prepared by the building developer in order to prepare its own internal monthly tabulated reports be reproduced on its equipment and forwarded to the agency. These reproduced cards, which contained all the data required by the agent for its reports, could then be processed by a local data center. The agent's data processing costs were thus reduced substantially, particularly since these cards represented the bulk of the input to the center.

From the reproduced cards the following monthly reports were prepared:

1. A control listing showing commissions paid in the current period, cumulative commissions paid to date, and commissions due
2. A salesmen's analysis—a listing of all contracts written by salesmen in company-assigned number

sequences with analysis of commissions paid in the current period, cumulative commissions paid to date, and commissions due. These were listed by current, delinquent, and cancelled contracts, with sub-totals for each group of contracts and a grand total for each salesman.

With this information management was able to follow up delinquent and cancelled contracts on a timely basis as well as to have a monthly status report for each salesman. The service cost was about \$2,000 a year.

#### ***Royalties***

A phonograph record manufacturer with an extensive catalog of albums and popular single disks had a problem with royalty payments. Royalties had to be paid to artists, producers, and song publishers on the basis of shipments during specified periods. As the number of titles grew, the company found the manual method of data accumulation cumbersome and expensive.

We recommended that the information be processed by a data center, where it could also be tied

into sales analysis by item, price line, and distribution channel. Master card decks were set up for each album and single record with codes indicating the artist, producer, and song publisher and the royalty rate applicable to each. The data center developed procedures and controls for accumulating sales, computing royalties, and printing royalty statements ready for mailing. All work was completed within two weeks after the close of a period, reducing overtime previously required. The cost was about \$2,000 a year.

### Cash disbursements

A medium-size supermarket chain required that cash disbursements for purchases and expenses be properly distributed to individual stores for operating profit determination. This distribution was being done with two conventional posting machines; a combination of ledger cards and journal sheets was used to accumulate information.

We recommended that one posting machine be converted to produce data in data processing input form. A punched tape output device was attached to the posting machine. The procedures were changed to call for a straight posting operation for cash disbursements with proper codes for store number and general ledger account number. When this information was posted, a punched paper tape was produced at the same time. The tape was forwarded to the data processing center for distributing, accumulating, and updating totals on a monthly basis. The tabulated report was the source document for posting to the store general ledgers each month.

This system not only accelerated the preparation of monthly operating statements by about two weeks but also eliminated the need for one posting machine operator. The posting machine itself was sold. The data center cost was about \$2,500 a year.

Most companies are faced with a physical inventory valuation prob-

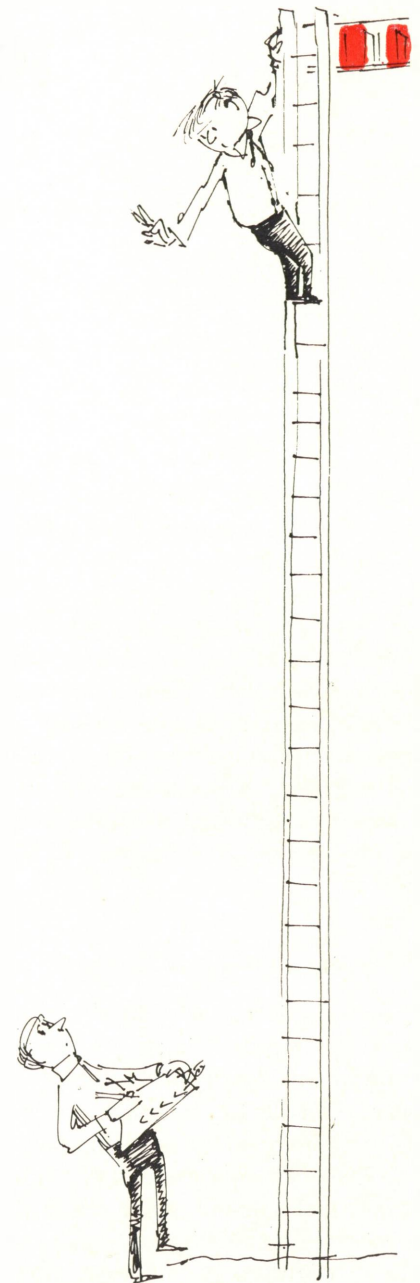
lem at least once a year. The task becomes especially onerous when there are thousands of different items in various stages of completion at various locations. To accumulate and compute this type of inventory manually takes many weeks and is subject to errors of many types.

### Costs

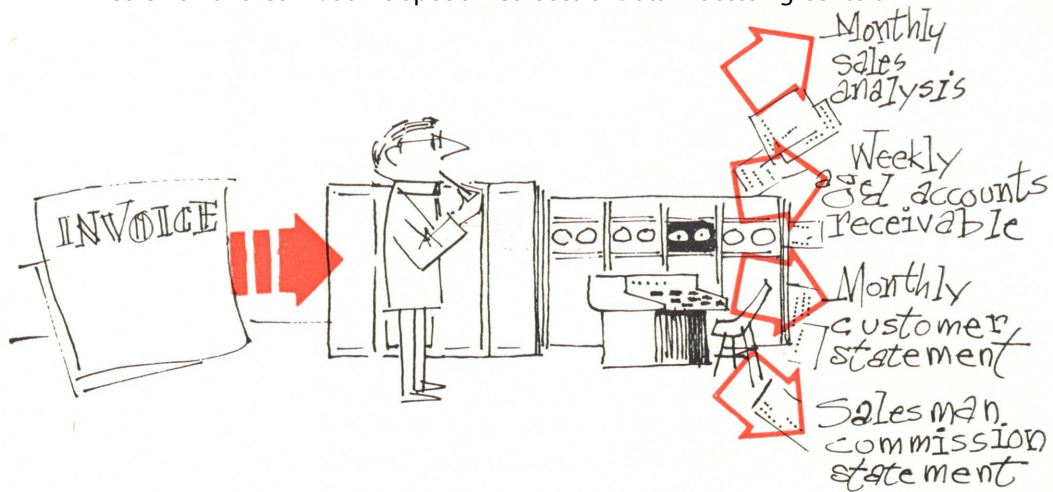
We have recommended to many companies that physical inventory valuations be performed by a data processing center, utilizing internal controls and processing methods appropriate to the type of business and inventory. Although the initial cost is relatively high, ultimately the inventory valuation can be done faster and more economically by machine than by hand.

The first time inventory valuation is done by a data center there will be little saving in time or expense, for all the source cost data, item numbers, and description information must be prepared by the client and furnished to the center. This information is used to prepare master decks for matching and costing the physical inventory quantities. To ensure timely end results, this preliminary work should be done at least three months before the physical inventory is to be taken.

After the first inventory has been processed by the center, the company need only make additions, deletions, and corrections in the original master information for future inventory periods. Then in advance of the inventory date the center can furnish to the company a tabulated listing of the inventory items, individual item punched cards with prepunched constant information, or individual item tickets. The information prepared by the center can be compiled in any sequence desired, such as location, item number, vendor, inventory classification, and the like. These documents can be used to record the actual physical quantities and returned to the data center for key punching the quantities



The first time inventory valuation is done by a data center, there is little saving. But from that point on, economy of time and money increases.



One source document gave all information needed for four important reports.

only. The cards can then be extended and accumulated and a final inventory printed.

After the first time, physical inventory data can be processed more rapidly and at less cost than by any manual methods. Techniques can be developed to age inventories so that obsolescence write-downs can be reduced. Reports can be developed to highlight problem areas of inventory for management action.

#### **Accounts receivable analysis**

Because it manufactured thousands of different items, a manufacturer of small parts found it very difficult to maintain an accurate, timely analysis of shipments by item. In addition, the maintenance of current aged accounts receivable records by customer and the preparation of monthly salesmen's commission statements were becoming burdensome for the small office staff.

Since all this information was derived from one source document, the customer invoice, we recommended that the invoices be forwarded to a data center. There all the information was captured on punched cards, and from these, the following reports were prepared:

1. Weekly aged accounts receiv-

able balances for credit and collection action

2. Monthly sales analysis by item number, showing the total quantity and dollar amounts of each item shipped to each customer that month

3. Monthly customer statements, showing all open items, ready for mailing as a by-product of the accounts receivable work

4. Salesmen's commission statements showing shipments by customer, the total for the month, and the commission amount.

With these reports management was able to do a better job of planning production in relation to sales and of follow-up for additional business from customers who were purchasing only one or two items. The data processing cost was approximately \$4,500 a year.

#### **Inventory control**

An office supplies and equipment distributor manually maintained perpetual inventory control records for all items purchased by each customer, showing minimum and maximum inventory quantities established for each item for each customer. Customers prepared requisitions for items withdrawn from their stock and forwarded copies of the requisition to the distributor. On the basis of the customer's req-

uisitions, the distributor took these actions:

1. Posted and updated the perpetual inventory records

2. On the basis of the minimum quantities established, provided for automatic reorder on open purchase order format and for shipment of items

3. Prepared monthly customer departmental usage reports showing items, quantities used, and dollars.

These reports became increasingly difficult to prepare on a manual basis. Timeliness was the crucial issue, for immediate processing of customer requisitions was the distributor's prime sales tool.

Now the same information is being processed by a data center. A computer updates and maintains customer perpetual inventory records on magnetic tape and generates the necessary reports. As a result the distributor can supply this specialized type of service to many more customers. No dollar figures can be specified for the data processing cost because charges were developed on a sliding scale.

With the equipment and technical skill available at data processing centers, an imaginative accountant or consultant will find no limits to the usefulness of these centers in solving data handling problems.