INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications   Order Processing and Dispatching

Type of Industry   Soft-Drink Bottler

Name of User   Royal Crown Beverage Company
                              Los Angeles, California

Equipment Used   IBM 1401-G Data Processing System

                              IBM 1232 Optical Mark Page Reader

                              IBM Unit Record Equipment

Synopsis

The Royal Crown Beverage Company of Los Angeles, California, had, with a rapidly expanding business, severely overloaded an established manual ordering system. The firm operates on a pre-selling plan which calls for overnight processing of all orders placed with salesmen. Documentation requirements include loading and routing forms for delivery trucks and the preparation of invoices to be used by the drivers making deliveries.

To handle the increased amounts of data that had to be processed, an IBM 1232 optical mark page reader was installed along with an IBM 1401-G computer. The 1232 serves as a direct data input of documents prepared by salesmen, drivers and dispatchers. The 1401-G computer handles all processing for the system. As a result, distribution costs have decreased by at least eight percent. In addition, management information is available on a daily basis.

, The distribution accounting problem faced by Royal Crown was of the most desirable kind -- it stemmed from prosperity.

Business expansion occurred at a rapid rate, especially following the introduction of the low calorie beverage, Diet Rite Cola. Increasing sales overloaded the established manual order processing and dispatching systems. A keyboard-operated, paper tape computer was installed to handle the increasing figurework connected with accounting for driver settlements. This was used in conjunction with an address plate system for imprinting names and addresses on order and invoice forms. Still, these approaches left RC handling every form individually. All input had to be entered into the keyboard. Then forms had to be sorted manually into route sequence.

Even then, RC had no economic method for satisfying its growing sales analysis requirements. These were two-fold:

1. Customers, particularly supermarket chains, wanted information on which products were moving, and in what quantities. This data was required in detail, on a current basis.

2. Data was needed for sales analyses, as well as for production and distribution planning for Royal Crown's expanded product line.

RC's distribution system proved a good candidate for punched-card computer processing. This is because of the highly repetitive nature of route distribution. Operations follow a regular schedule with a number of fixed customers at established locations. For the most part, the only changes are in the quantities ordered of Royal Crown's line of 21 products.

By-product figures from these applications, in turn, form the basis for sales analysis reports generated on the computer. These assist in management decisions on purchasing of supplies and materials, production, sales coverage, sales promotion and actual physical distribution. The same basic data also forms the primary input for salesmen's commission accounting procedures.

THE SYSTEM

The system evolved by Royal Crown is believed to be the first in the industry to implement direct data input from documents prepared by salesmen, drivers and dispatchers.

This approach was made possible through the installation of the 1232 optical mark page reader which is directly connected to a 534 card punch. The combination is capable of converting the optical forms, marked with ordinary pencil, into punched cards at the rate of 12 to 15 per minute. Under direction of a control card in the 534, it is possible to duplicate certain information fields or intersperse spaces for data formatting.

Royal Crown's computer is a 4K 1401-G. Input/output is handled on the 1402 card reader/ punch and 1403 printer. The card reader/punch can input 450 cards per minute.

There are two equipment options on the 1402. One is the punch-feed-read feature, which permits punching of new or computed information into the same card that provided the initial input. In this way, during the course of several runs, the same set of cards can accumulate all the results, thus reducing the volume of cards necessary and the chance for error. The other feature is a read-feed-delay which permits the card reader/punch to collate and perform pure merge operations. The 1403 is capable of printing 465 lines per minute.

Royal Crown operates on a pre-selling plan. The firm employs 40 salesmen who call on customers, following pre-established routes. Beverage fulfilling orders written by the salesmen are delivered by the 65 drivers the following day, except in cases where customers specify future dates.

PUNCHED CARDS IN ROUTE SEQUENCE

ARE PROCESSED THROUGH

AN IBM 1401-G COMPUTER

TO PRODUCE ORDERS AND INVOICE FORMS

WHICH CONTROL SALES

AND DELIVERY ACTIVITIES

Salesmen turn in 1,300 to 1,400 orders each day. These orders are written up on pre-printed forms designed to be used in the optical reader. The forms are partially filled in on the computer during runs which process a week's orders at a time. This computer-produced information includes both alphanumeric heading and 1232-format encoding of customer identification, salesman, route information and the date on which the salesman is to call on the customer. The forms are printed in the proper order for each salesman's route from master card files assembled on the basis of efficient delivery routes. The same files are later used for preparation of invoices.

The salesmen complete the order forms on the customer premises to indicate the desired quantities of each type of product. Simple pencil strokes encode the information for reading by the 1232. The salesman can also indicate the number of empty bottles to be picked up and other special allowances. A carbon copy of the totaled order is left with the customer.

When the orders are fed into the 1232 at the end of the day, punched cards are automatically produced, incorporating the information filled in by the salesmen, as well as the identification data pre-encoded by the computer.

These cards are sorted into dispatch, or delivery route sequences, using an 083 sorter. Once sorted, the cards are run through the computer for editing. This involves segregation of orders for future delivery, verification of customer numbers, incorrect product designations, unlikely order quantities or other situations requiring special attention. Then a "pre-dispatch" listing is produced for each delivery route.

Working from these lists, the dispatcher checks the distribution and rearranges the cards for "ideal route" balancing of the next day's delivery loads. Royal Crown has set up the ideal route as one which enables a driver to deliver 350 cases of beverages at 20 customer locations with as little

mileage as possible and in as short a time as possible.   The prelisting by computer has made it possible to improve the efficiency of this process by at least 100 percent.

In addition to allowing for normal fluctuations in customer orders, the dispatch adjustment accommodates "off-route" or "call-in" orders.   These are orders which are not normally on a particular day's routes, but they occur frequently for a variety of reasons, such as surging sales during a hot spell.

Once the dispatch adjustment is completed, the cards are again run through the computer to produce loading slips.   These are used by the warehouse to load the proper quantities of each beverage onto trucks for the next day's deliveries.

Because of the time pressures associated with loading the trucks, the editing, pre-dispatch and load slip operations are done in batches as quickly as the orders are turned in by salesmen. This insures a smooth flow of load slips to the warehouse.

After all the load slips have been produced, the cards are run through the computer to print invoices for every customer, arranged in delivery sequence.   As in the case of the order forms, the computer automatically fills in identification information for later cash receipts and accounts receivable processing on the 1232.   Each invoice is also printed to include extensions and totals based on the salesmen's order information.

When the drivers arrive at work in the morning, they are given copies of the loading slips so they can verify the loads for which they will be charged.   They also receive the invoices they will use for delivery.   The invoices have spaces provided for the drivers to make additions or changes in the order.   Where alterations are necessary, the driver makes the new extensions and totals to correspond with the exact delivery and returned empty bottles or old beverages.   It is essential that the

DOCUMENTS CREATED BY DRIVERS,

SALESMEN AND CHECKERS

ARE READ BY THE

IBM 1232 OPTICAL MARK PAGE READER

driver be able to do this because on approximately 60 percent of Royal Crown's sales the driver collects cash. The driver also encodes the final totals in optical markings.

At the end of the day, when the drivers return from their routes, a third optically marked form is used to complete the input records. This is filled out by the checkers to indicate exactly what is on the truck in the way of empties or undelivered beverages. At this time, the driver also gives the checker information specifying turndowns or beverage returns.

The driver settlement is not processed until the following day because the night shift is taken up with dispatch processing. The settlement involves a conversion of the returned invoice forms and the checker form into cards on the 1232. Then the data is merged and processed to produce the driver settlement reports. These indicate overage or underage, any mathematical mistakes, reconciliations of the truck load and returns, cash receipts and charges, and driver settlement data.

Then, these same cards are processed further. With new summary data added, they are used to produce several management reports. These include driver performance, sales commissions, accounts receivable, sales analyses and accounting summaries. In conjunction with information from the sales order processing, other reports on salesman performance, off-route order trends and seasonal changes can be produced. Historical information is also accumulated for periodic analytical reports on customers, salesmen and products.

Other Applications

A number of other data processing jobs is also handled by the Royal Crown computer system. A fuller, more meaningful perspective of the total operation can be gained by considering the following list of 1401-G runs:

DAILY

(Day Shift)

Accounts Receivable Customer Billing
Accounts Receivable File Update
Driver Load Reconciliation
Driver Settlement
Salesmen Net Sales Report
Salesmen Turndown and Redispatch Report
Customer Invoice Audit
Cash Receipts

(Night Shift)

Sales Order Audit
Pre-Dispatch
Load Slips (Warehouse truck loading)
Customer Invoice
Final Dispatch

WEEKLY

Sales Order Pre-printing
Payroll Register
Payroll Checks
Payroll Labor Distribution
Salesmen Commission and Sales Report

MONTHLY

Driver Performance Report
Company (Salesmen and Branch)
   Net Sales and Commission Report
Chain Store Performance Report
Accounts Receivable Trial Balance
Accounts Receivable Monthly Statements
Accounts Receivable Aged Trial Balance
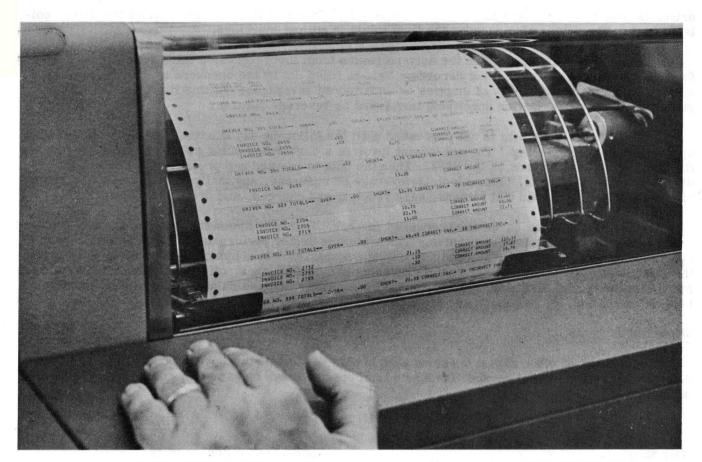
QUARTERLY

941 Tax Reports

ANNUAL

W-2

RESULTS

The major immediate results of this system are three-fold:

REPORTS GENERATED BY THE 1401-G SERVE AS THE BASIS FOR IMPROVED DISTRIBUTION MANAGEMENT.

1. Administrative savings. Documents such as orders and invoices, which were formerly extended and written manually, are now generated automatically by the computer.

2. Dispatching is done more efficiently in less time. The computer system is providing information which permits the constant refinement of delivery routes. Transportation costs are reduced.

3. Management (both operating and sales) has more information sooner. Operating reports have become tools for the day-to-day conduct of business.

The net effect, within a few months after the system was introduced, according to James E. Lamkin, vice president, is that overall distribution costs were reduced by eight percent. Additionally, the company now has a comprehensive system that provides expanded capacity for keeping pace with a growing sales volume.