The Role of the Food Distribution Industry in Advanced Checkout Systems

An Approach to Automation and Checkout

Food 70's

Describes Charecogn's System for automatic checkout and lists potential in-store saving from use of system.

A. John Esserian
Charecogn Systems, Inc.
Natick, Massachusetts

● Charecogn Systems, Inc. is pleased to be part of this annual meeting of the Food Distribution Research Society. The subject of advanced checkout systems has been a research objective of equipment suppliers and most certainly has been a serious subject of concern of the food retailer industry.

It is Charecogn's premise that automated checkout is rapidly moving from the research stage and is now well into the development stage and prospect of installation and deployment can be measured as a near-term probability.

During the past five years Charecogn has worked closely in satisfying design objectives established by the U. S. Department of Agriculture for an automated checkout stand with design objectives that offer the promise of increased customer service, greater accuracy, reduction of front end labor, the obtaining of digital data for subsequent reordering and the machination of such data for merchandising and cash control purposes.

This effort culminated in the delivery to the USDA, for evaluation purposes, of a complete digital system, including (1), automatic checkstand terminal, (2) central processing, (3), the use of optical scanning as the primary data input.

In detail, the automatic checkstand includes:

A. A hand-held optical scanner

B. A ten key keyboard for manual entry

C. A digital display for customer verification of price of item

D. An alpha numeric printer to be used as a customer journal

The central processing unit included a Hewlett-Packard mini-computer of the 2114 class and an ASR terminal to be used as the basic entry into the digital system.

The evaluation of the system began in June of 1970 and was completed in September, 1970. The full USDA report which will be public, will be issued, as I understand it, during the latter part of the first quarter of 1971. The purpose of this evaluation is to determine whether automatic checkout as conceived and developed by Charecogn Systems can be considered a viable alternative to manual cash register terminals as now installed and as we now know cash register terminals of various configurations.

The challenge presented is whether optical scanning is a reasonable alternative to keying of cash registers. I can announce to this group that the results of the USDA study conducted over multiple studies of given orders indicate that the ring-up time for each item is something less than 1-1/4 seconds per item. This speed includes allowance for identifying taxables and allowance for coupon credits and allowance for multiple prices, that is, none of these

categories had to be segregated for proper identification and proper allowance. Thus, all items are rung up at the rate of 1-1/4 seconds per item. This is the main research data obtained from this study at this time.

The fact that this speed through-put is comparable and perhaps superior to a trained cashier establishes hand-held optical scanning as a practical alternative to the gathering of data and providing of various transaction and inventory handling at the grocery checkout station.

The system description is as follows:

The scanner, about 8 oz. in weight, and held by the operator reads a black and white one inch cicular tag which has capacity to identify eight decimal digits of information, or up to 99,999,999 discrete different items. This tag, which is not magnetic, which if not phosphorescent and not two colors or more, is read by a simple rotating mechanism which contains within it all electronics and light source necessary for the optical pickup.

Can curvatures, both convex and concave, or over 2" in diameter can be read, as well as degraded copy such as half tones, and in addition line widths of the pattern which vary as much as 10% can also be read.

It is the Charecogn premise that the capacity and ease of reading allow for practical application to item identification for the supermarket industry.

Along with reference to studies done by the National Association of Food Chains and by other studies done by the U. S. Department of Agriculture, and along with our own internal studies concerned with supermarket economics, we offer the position that automated checkstands, when fully

deployed, offer a savings of at least 2% of store sales to the food supermarket industry. These savings may be obtained by the following category breakdown:

1. Labor - Front end labor, baggers and cashiers, and related training costs, constitute approximately 2-1/2% of store sales as an operating expense. Charecogn system promises the potential that 20% of this labor can be saved. Thus, the economic impact can be measured as 20% of 2-1/2%, or approximately..... .5% of store sales as a saving.

2. Accuracy - Industry figures acknowledge that .4 to 1.0% of under-rings are experienced. A highly accurate system such as is proposed would represent savings to the store of at least -..... .5%

3. Reordering - As an integral part of the transaction at the checkout, not only does the customer obtain her transaction information, but specific identification of the product sold is retained within the central processor and subtracted from the inventory of that particular item. Thus, all items going through the checkout are identified as such, and the fact that one or more are sold becomes a basis for an automatic reordering routine, without subsequent data entries such as manual entries or other forms of reordering. It is estimated that this feature will allow for approximately.2% savings at the store level.

4. Price Marking - The utilization of item identification requires the notation of that item number only once, either at the manufacture's level or at the local level. Thus, all pricing and price changes are accurately accomplished through access into the central processor. The item itself does not have to be handled again regarding any number of price changes. It is estimated that this feature will also provide savings to the stores of approximately..... .3% of store sales.

5. Other - Availability of item identification will provide measurable savings in the following areas. They will only be categorized and we will be happy to discuss them in detail:

A. Merchandising analyses
B. Management reports
C. Cash control measures
D. Consigned goods identification

Automatic reports concerning the above areas will provide additional store savings of ..... .5% of store sales.

Total- 2.0%

In the development of equipment such as shown to you, it is important to recognize that the desired and most suitable final configuration requires close support between the end user and the development group. The variations and the options available in electronic design are such that without close end user cooperation it is entirely possible that equipment designs may not fully satisfy user objectives.

The Charecogn output, which not only includes price but also full alpha numeric description of the item transacted, along with unit price description can easily accommodate, of course, only a straight numeric output. There is a question whether the keyboard should be a ten-key keyboard or a multiple key keyboard, depending on user requirement. The size of digital displays and configuration can benefit from user recommendations.

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      .11  JELLO    .04/ OZ .
      .11  JELLO    .04/ OZ .
      .11  JELLO    .04/ OZ .
      .11  JELLO    .04/ OZ .
      .11  JELLO    .04/ OZ .
      .11  JELLO    .04/ OZ .
      .53  TTHPST   .16/ OZ .
      .25  ALFOIL   .01/ SFT
      .29  ALFOIL   .01/ SFT
     .24*  SPAGH    .24/ LB .
     .23*  SPAGH    .24/ LB .
      .30  SHRWHT   .03/ OZ .
      .38  SYRUP    .03/ FOZ
      .14  TOMPST   .02/ OZ .
      .31  A CENT   .31/ OZ .
      .11  JUICE   .03/ FOZ
      .11  TOMSUP   .01/ OZ .
      .10  TOMSUP   .01/ OZ .
      .26  MXCORN   .02/ OZ .
      .21  NBLETS   .02/ OZ .
      .33  FRITOS   .07/ OZ .
      .17  PEAS     .17/ LB .
     .34*  CHOCHP   .03/ OZ .
      .39  CKRSP    .04/ OZ .
     .34*  CHOCHP   .03/ OZ .
      .41  PROD 19  .05/ OZ .
     .32*  CHOCHP   .03/ OZ .
     .67   HI - COJ  .01/ FOZ
      .24  CFMATE   .08/ OZ .
     .30*  GINALE   .01/ FOZ
     .30*  GINALE   .01/ FOZ
     .29*  GINALE   .01/ FOZ
                   8.22  SUM
                    .04  TAX
8.26  TOTAL          82  STAMPS
                JULY 23 1970
THANK YOU
CHARECOGN USDA ARS TFRD
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The total system concept and its reporting capabilities certainly can benefit from the experience and the requirements of the food distribution industry. The fact that speed, accuracy, and the gathering of data in digital format can be obtained by the use of hand-held optical scanners puts a mutual burden upon the user as well as the manufacturers of equipment to form relationships in which a combined or joint development effort is initiated to put into effect this established technology.

Charecogn Systems looks forward to continued relationsips with the Food Distribution Research Society which is playing an important role in checkout technology as well as other important facets of the Food Distribution Research Society. We look forward to the issuance of the USDA report on the evaluation of automatic checkstands, using our particular input technology and to another opportunity to present the results of our continuing development efforts to this group.

Thank you. ●