

COUNTING ON COMPUTERS

The New Tool for Restaurant Management

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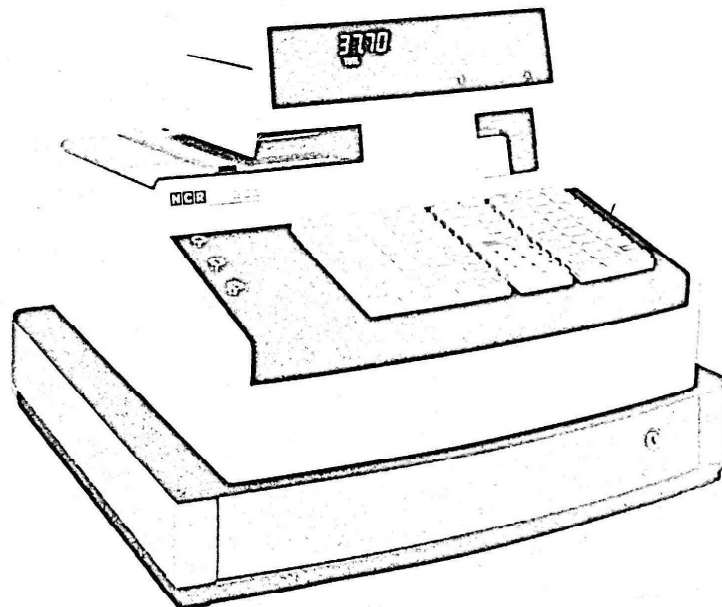
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registers measured dining room food and liquor sales, tip totals, and cash and charge totals. All other desired information, such as food cost percentages and inventory information, had to be derived manually from guest checks.

The Electronic Cash Register—A Near Computer

Mechanical cash registers were not phased out until the early 1970's, when the NCR 250 was introduced (see Figure 13). It marked the transition from mechanical to electronic cash registers. After ten years of tests, the electronic cash register (ECR) was a reality. The mechanical cash register was replaced by a machine that talked the computer's language.

The NCR 250 was an electronic machine with complete stand-alone capability, multiple totals, automatic cassette data collection, total in-store reporting, and master-to-satellite configurations. The 250 accurately recorded sales transactions and afforded greater



Electronic cash register (NCR 250)
FIGURE 13

*Courtesy of National Cash Register
Company (NCR)*

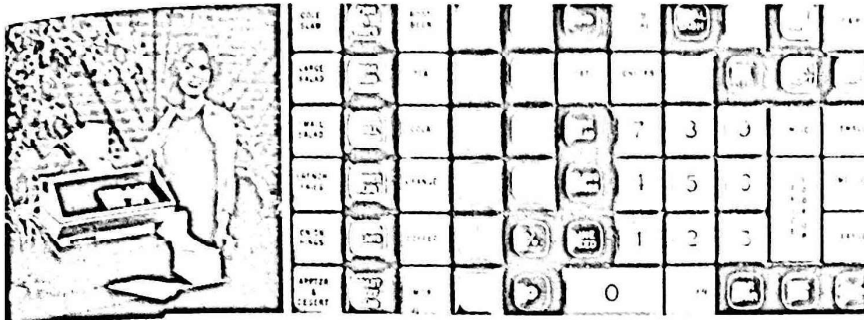
control at pre-check, bar, and cashier stations, as well as vital management information. The ability to record item prices by pressing a single key or entering a particular coded number resulted in savings that had previously been lost to human errors. Another major advantage was the reduction of transaction time. The 250 supplied comprehensive information about all aspects of the restaurant's transactions and consequently provided greater control over cash and inventory.

Production of the new ECR was not limited to NCR. The hope of sharing in the profits on this \$2 billion cash register market lured new competitors into the field. However, NCR had enough strength with the conservative customers in the retail industry to set a new style. Most other big companies interested in manufacturing electronic cash registers waited to see NCR's new machines before committing themselves. Figure 14 displays some of the wide variety of machines available. Figure 15 shows some of the reports typically available.

But whatever the results were to be, electronics had come to the retail cash register. One of the first stores to experiment with the ECR was Franklin Stores Corporation, a New York based specialty and discount chain, in 1971. Franklin estimated savings of \$5,000 to \$10,000 per store, or more than \$100,000 per year.

Before long the familiar ringing sounds of the mechanical cash register became just a nostalgic memory of the mechanical age. The mechanical cash register had finally succumbed to the inescapable pressures of electronic technology. Though the first cash registers met with opposition, the cash register was now considered a development which had and would continue to revolutionize the financial aspects of merchandising the world over.

By using the pre-set pricing feature, food and beverage items could be printed automatically. The register buttons were pre-set and coded for menu items rather than for their cash denominations (see Figure 16). When the appropriate key was depressed, the computer automatically registered item prices on the register dis-



DEPARTMENT REPORT

2 15 8
09:45
21 X
5
218
25 # CB
40 95
1023 75 CB
2 4
208
92 75 CB
3
1116 50 TL
2 7
01P
156
04 # SR
8 98
35 92 TX SR
1
06 28
Sequence Counter
Register Number

GRAND TOTAL REPORT

2 15 8
09:43
20 X
0
24135 05 TL
3151.98 DB
144 54 TX TL
12 25 TX
16 # C
21 65 AT
8 87 PB
06 57 1

CLERK REPORT

2 15 8
10:02
28 X
7
01 EM
1.72 SD
21.74 TL
02 EM
4.44 SD
51.86 TL
06 17
Sequence Counter
Register Number

HOURLY PRODUCTIVITY REPORT

2 15 8
09:47
27 X
9
32 00 HR
68 27
08 01 HR
21.20
00 02 HR
21 22 HR
111 .36
15 23 HR
71.77
06 15

Sample reports available from an ECR *Courtesy of Data Terminal Systems*
FIGURE 15

and provide a greater variety of pre-set keys and management reports.

As the ECR's evolved from single unit registers, more sophisticated versions, with broader microcomputer capabilities, came on the market. In terms of capability, these were the predecessors to the point-of-sale systems which are discussed in the next section.

Enter the Point-of-Sale (POS) Terminal—A Full Computer in the Restaurant

The point-of-sale terminal is similar to the electronic cash register, but it performs many more functions than the ECR. It is, in fact, a full microcomputer, and as such has a potential for instore restaurant management, in ways that are only beginning to be tapped.

As a computer, it can store the data that is recorded through its transactional keys, as well as be programmed to manipulate these data to produce a wide variety of management reports.

In the POS systems, the microcomputer or "smart box" comes in two basic physical configurations. One involves locating the central processing unit, including software and memory, in a separate box that may be located virtually anywhere in the restaurant. This device can then be hooked up to a variety of terminals, including register-type terminals which are referred to as *slaves* or *satellites*. There is little or no computer capability in these slave devices. In this configuration, the smart box is generally expensive and the terminals relatively less expensive.

The second configuration has the smart box built into one of the terminals which serves as a master control unit. This unit then becomes the master into which other terminals may be connected in similar fashion to the stand-alone CPU. There is no essential difference between performance capabilities of these two approaches. However, one or another may prove to be more economic

for your particular situation. (See Figure 66 for more information on this subject.)

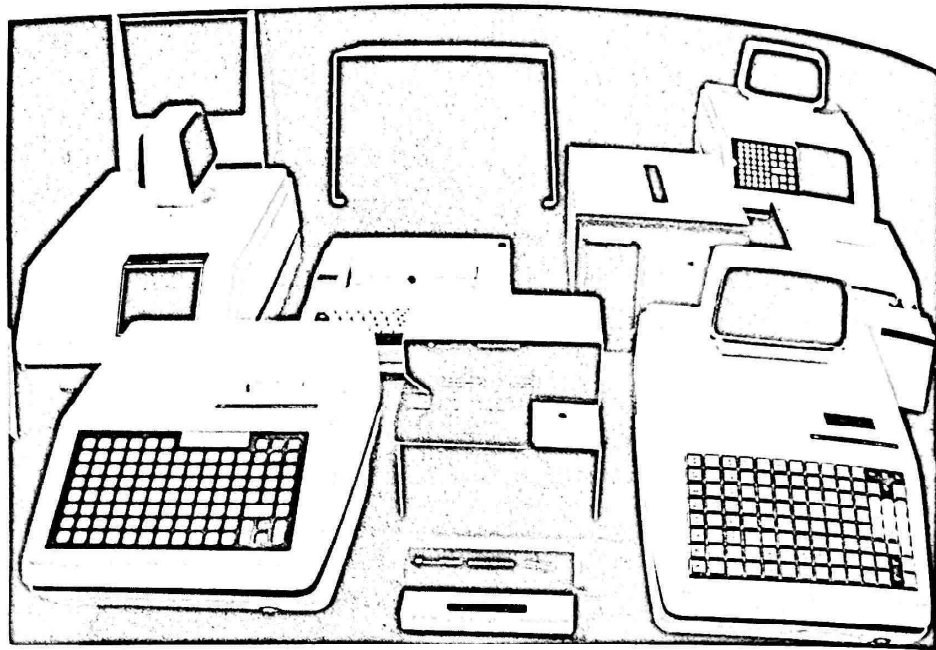
It is important to emphasize that these machines are not just improved electronic cash registers, but sophisticated computers. Restaurateurs can now have systems in the restaurant that perform many of the functions of a mainframe computer at a fraction of the cost.

There are several major advantages to a microprocessor-driven system. The most important feature, especially for a growing company, is the system's expansibility—the system can grow as the company grows. At any point, therefore, the restaurateur is paying only for what is needed. Data collection, reporting, and peripheral devices can be added to the system as the company's needs increase. This feature of the new system protects the company from system obsolescence.

Devices include not just menu and bar related terminals, but terminals in the receiving area, printers in the kitchen, and printers in the service bar. These systems are now being expanded to provide in-store capabilities to perform such tasks as inventory control and limited menu recipe analysis. For the operator of an individual restaurant, these systems can provide a computer with a wide range of capabilities at the lowest cost.

Complete menu changes can be made easily, too. For example, terminals in a microprocessor-driven system can store in memory a table with all of the menu prices and special order prices. Some microprocessors have the capability to store up to several thousand prices that can be referred to at any time.

AM Documentor was one of the first companies to develop operational POS systems and is currently the largest supplier of POS systems for the food service industry. Its systems contain the full range of terminal-type devices as can be seen in Figure 17. It is also one of the few manufacturers whose terminals can read guest checks directly, using optical scanning techniques.



Microprocessor-based POS system

Courtesy of AM Documentor

FIGURE 17

AM Documentor has recently introduced the model 3200 series which is designed around a software package resident on a microprocessor that gives the food retailer transaction control as well as a comprehensive management information system. The system was introduced in 1975 and has been continually enhanced making it one of the most sophisticated POS systems available today.

Documentor systems work well with kitchen printers and other peripheral devices. Recently, a new high speed tab printer was introduced (the model 306) which prints three lines per second.

The system can be tailored to meet food retailers' individual needs. Reports produced include inventory accounting and revenue statistics. The data are printed directly on register tapes.

The key to the AM Documentor system 3200 is the microprocessor-based controller which consolidates the other units (e.g., tab printer, manager's terminal, telecommunications). In addition to the main memory, Documentor offers a magnetic disc which

enables the user to store large data files in auxiliary memory. Some of the information includes price tables, inventory data, and historical information. The disc is removable, giving the user increased convenience and versatility.

NCR, while somewhat later in its development of POS systems, has now produced its 2160 system (see Figure 18).

Figure 19 shows one of the more interesting features of the NCR system—its flat keyboard on which you simply touch a designated price key location. The system is particularly useful in restaurants, as the keyboard is waterproof and spillage is easily cleaned up. Menu item keys are placed at any position desired and complete menu changes are made by simply replacing one keyboard insert with another. Files of changes in menu composition or pricing from dinner to lunch to breakfast can be stored in the microprocessor and called in automatically.

POS systems generally (see Figure 20) allow for a flexible system which the manager can design to suit his particular needs. Information can be routed to any location within the store. Now as orders are totaled and verified at the cashier station, they can immediately be transmitted from the microprocessor to the kitchen preparation area or any other area of the restaurant. The memory can store hundreds of orders which, in case of delays in delivery or ordering, can be retrieved at any time for recall and payment.

The system both protects and controls cashiers by allowing them to move to different registers while maintaining individual cashier responsibility. The new system also reports on *menu item explosions*, i.e., the conversion of menu sales to the amount of different raw materials and ingredients used.

Additionally, these systems will still provide all of the management reports previously generated by ECR systems and more. Some of the reports generated include:

- total sales by unit and dollars
- inventory status

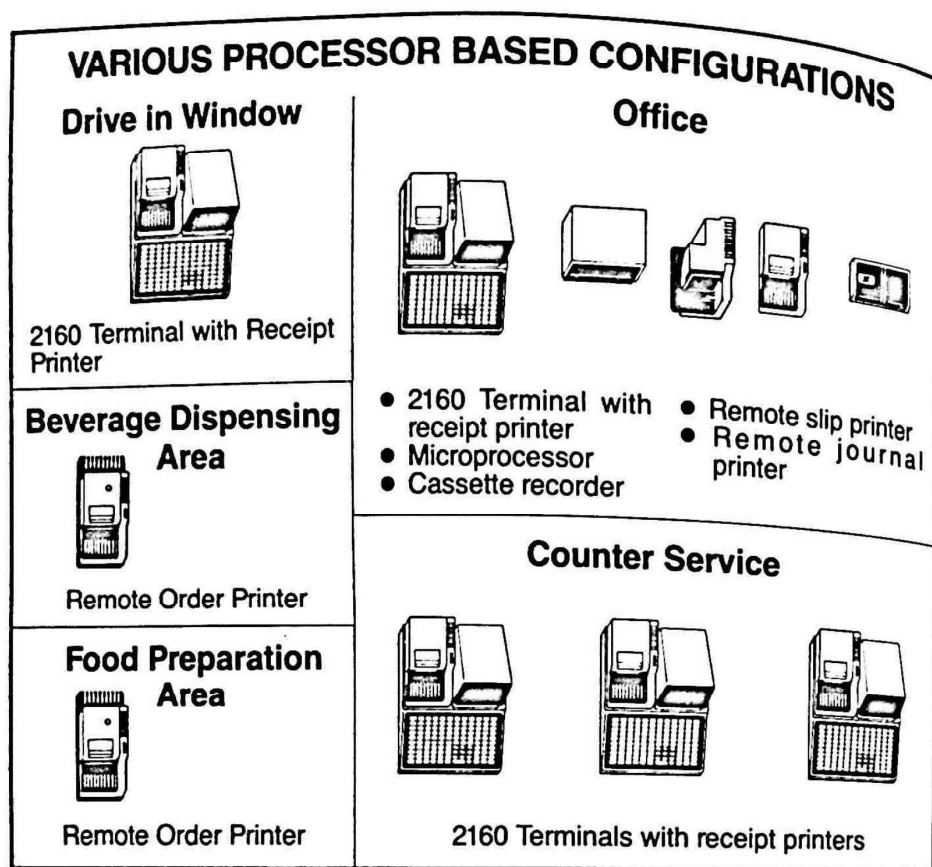


FIGURE 20

Courtesy of NCR

- sales per man hour
- cashier sales productivity
- labor utilization

Some systems allow cashiers to compare sales to food costs by individual menu item. The only restriction on the computer's capability is the program you feed it; the computer can solve most problems as long as you provide adequate instructions.

Microprocessor-driven systems not only provide more in-depth reporting and better cash and inventory controls, but they are more cost-effective for large installations. For example, a microprocessor-driven system with one processor and eight terminals can cost up to \$19,500 (\$7,500 for the processor and \$1,500 for each terminal). Without the processor, the same system would cost at

Sales Analysis

The Sales Analysis report enables management to measure sales performance of food and beverage items in units and dollars, by menu item.

- Provides sales comparison by menu items for today, month-to-date, and year-to-date
- Shows relation of each item sold in terms of percentage of total sales for today, month-to-date, and year-to-date
- Permits management to make menu price or portion adjustments as necessary.

Waitress Report

The Waitress Report is a comprehensive analysis of the sales productivity of individual employees relating to selected menu item.

- Shows sales in terms of dollar amounts and units sold and indicates percentage of total sales
- Serves as a tool for monitoring waitress productivity by menu item
- Provides a complete record of charge tips paid to each server to comply with federal and state regulations

SALES REPORT CONSOLIDATED										MAY 10, 1977 PAGE 0001					
C	KT	WIK	ITEM NUMBER	DESCRIPTION	MENU PRICE	UNITS SOLD	TOTAL SALES	% OF TOTAL	ITEM COST	TOTAL COST	%	SALES MTD	SALES YTD	SALES YTD	%
1224	1	1	100	SHRIMP COCKTAIL	2.75	52	143.00	19.73	1.03	95.10	66.54	666.00	19.00	6,732.00	19.77
1224	1	1	400	SHRIMP	2.75	67	184.25	25.45	1.27	88.00	66.33	968.00	26.22	6,124.00	26.22
1224	1	1	300	OYSTERS/HALF SHELL	2.16	48	103.68	13.90	.92	44.10	43.80	365.00	10.46	4,246.20	12.47
1224	1	1	407	CRABMEAT W/MAI TAIL	4.25	37	157.25	21.69	4.02	74.74	47.92	1,020.00	30.62	8,074.00	26.22
1224	1	1	500	PROSCIUTTO W/HAM/LOIN	2.40	58	139.20	19.20	1.08	62.64	45.08	345.00	10.37	5,000.00	10.37
TOTAL APPETIZERS						262	724.75	8.46		341.74	49.91	3,337.10	9.50	34,845.50	8.46
1224	1	1	700	SOFT SHELL CRAB	7.25	85	616.25	16.18	2.40	221.00	36.46	2,610.00	13.03	27,847.00	16.18
1224	1	1	800	SURF & TURF	10.00	74	740.00	19.86	4.25	314.50	38.01	5,250.00	26.24	45,727.20	23.04
1224	1	1	900	BREAST OF CHICKEN	7.75	88	682.00	16.71	1.41	124.00	18.19	3,255.00	16.25	32,003.00	18.19
1224	1	1	1000	FILET MIGNON PERLO	10.25	70	717.50	17.50	5.52	380.40	53.05	3,075.00	15.35	32,550.00	18.19
1224	1	1	1100	RAINBOW TROUT	7.75	80	620.00	16.19	2.23	176.40	26.77	1,860.00	6.28	26,180.00	12.21
1224	1	1	1200	PANFRIED ENG TURBOT	9.45	67	633.15	15.52	5.21	349.07	55.13	3,980.00	19.02	35,360.00	17.49
TOTAL DINNER ENTRE						464	4,070.20	48.76		1,573.45	38.57	20,825.00	57.14	198,025.00	52.67
1224	1	1	1300	CHEESE OMELET	3.35	124	415.40	23.16	.81	100.44	24.17	2,010.00	27.61	20,010.00	23.16
1224	1	1	1500	CHICKEN CORDON ROUGE	3.75	136	510.00	20.44	1.23	180.00	35.46	2,825.00	27.61	22,375.00	20.44
1224	1	1	1600	WISKEY OF BEEF	3.40	117	400.40	22.83	.80	105.38	25.71	1,000.00	22.91	18,270.00	22.87
1224	1	1	1700	SAUTEED SCALLOPS	3.05	119	362.95	25.55	1.45	172.55	37.64	1,017.00	22.05	19,000.00	22.44
TOTAL LUNCH ENTRE						496	1,793.05	21.43		559.17	31.18	7,332.00	20.92	70,445.20	21.14

WAITRESS REPORT COMPANY 1000 STORE 0001 REGISTER 0001																				MAY 10, 1977 PAGE 0001	
WAIT NO	CHARGE TIPS	SALES AMOUNT	% OF SALES	SHRIMP NO	SHRIMP %	OYSTER NO	OYSTER %	CRABME NO	CRABME %	PROSCIU NO	PROSCIU %	SOFT S NO	SOFT S %	SURF S NO	SURF S %	BREAST NO	BREAST %	FILET NO	FILET %	RAINBOW NO	RAINBOW %
1	21.30	120.30	1.02	0	.00	0	.00	0	.00	0	.00	2	2.35	2	2.75	2	2.27	2	2.05	2	2.50
2	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
3	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
4	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
5	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
6	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
7	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
8	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
9	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
10	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
11	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
12	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
13	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
14	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
15	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
16	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
17	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
18	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
19	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
20	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
21	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
22	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
23	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
24	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
25	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
26	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00
27	25.00	140.10	1.21	1	1.92	1	1.49	1	2.00	1	2.70	3	3.52	3	3.65	0	.00	0	.00	0	.00

FIGURE 21

least \$28,000 (\$3,500 for each terminal). Remember, in the processor-driven system the other terminals are broadly considered "dumb," while the processor is the "intelligent" box. Having the intelligence restricted to one terminal or a separate device helps reduce the cost of a system while at the same time increases the system's capabilities.

The Microcomputer Cannot Do Everything

While there is much analysis that can be accomplished using these microprocessor computers, certain more detailed analyses still have to be done on larger back-of-the-house minicomputers. Companies such as NCR offer these systems as well. One of these is NCR's Interactive Restaurant Management System. This system accepts cassette information from the POS system and enters it into a back-of-the-house computer for further processing. The results of these additional analyses are more comprehensive sales reports and waiter/waitress activity reports, such as those shown in Figure 21. *Inventory analysis reports* are turned out like the one shown in Figure 22. Finally, the system provides cost analysis information such as that shown in Figure 23.

SUMMARY AND PERSPECTIVE ON THE FUTURE

The microprocessor-driven POS system represents the culmination in the evolution of the cash register. We can all remember a decade or so ago when only mechanical cash registers were available, machines that could add and keep totals. Then electronic cash registers were developed that could do the same job as mechanical registers, performing more quickly and more efficiently while providing greater controls over cash and inventory than ever before. And now, systems that are basically comprehensive management systems built into the computerized electronic cash register—mini-electronic data processing systems driven by microprocessors—are a reality.

Inventory Report

Inventory Report
The Inventory Report shows the current on-hand inventory by quantity and dollar value. Food and beverage usage, purchases, and shrinkage are indicated for either the month-to-date or year-to-date. It reports the variance between the average price and the last purchase price of an item to aid management in analyzing cost trends and to achieve improvement in buying efficiency. Information such as average daily usage and days of inventory on hand enables management to maintain properly balanced inventory levels.

Below Minimum Report

Below Minimum Report
This buying report is printed as an automatic by-product of the inventory update function. It calls management's attention to those items that fall below established minimum requirements. In addition to identifying items below established inventory levels, the Below Minimum report provides management with all the necessary information to aid them in buying. This includes the minimum quantity, the last purchase price, the last date purchased, and actual on-hand inventory.

RECIPE 2A

MTD INVENTORY REPORT
CONSOLIDATED

MAY 18, 1977 PAGE 0022

CC	ST	INV NO	C DESCRIPTION	UNIT	***** U S A E *****	***** U R C H A S E *****	***** S H I N A S E *****	***** Q M A N C *****	***** U S A E *****	***** U R C H A S E *****	***** S H I N A S E *****	***** Q M A N C *****	***** U S A E *****
					QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
					AVG/CST	AVG/CST	AVG/CST	AVG/CST	AVG/CST	AVG/CST	AVG/CST	AVG/CST	AVG/CST
					DOLLAR	DOLLAR	DOLLAR	DOLLAR	DOLLAR	DOLLAR	DOLLAR	DOLLAR	DOLLAR
1234	1	002500	0 CHANGES	LB	3,070	8,10	45,800	5,20	0.02	1,500	5,20	70,430	5,20
					10,000	.30	80,500	0.10		5,200		815,300	0.20
1234	1	002601	0 ORANGE SLICES	EACH	5,010	0.00	800,000	0.00	0.02	17,000	0.00	800,120	0.00
					171,000	1.00	800,000	0.00		0.1200		801,370	0.00
1234	1	002506	0 PINEAPPLE SLICES	EACH	170,000	0.00	100,070	0.00	0.01	10,000	0.00	800,000	0.00
					80,700	17.00	823,000	0.00		5,000		837,000	0.00
			0 TOTAL FRUITS & VEG.		1,747,010		4,727,000			100,000		8,720,000	
					\$260,400		\$080,670			\$400,000		\$072,300	
1234	1	002601	0 LEMON JUICE	FLOZ	203,230	0.01	330,000	0.02	0.01	17,000	0.01	47,770	0.01
					84,000	20.32	300,000	0.01		0.000		33,000	0.01
1234	1	002602	0 ORANGE JUICE	FLOZ	330,000	0.01	300,000	0.02	0.01	32,000	0.01	33,000	0.01
					10,000	33.00	300,000	0.01		0.000		37,000	0.01
1234	1	002603	0 PINEAPPLE JUICE	FLOZ	131,000	0.01	400,000	0.02	0.01	23,000	0.01	40,000	0.01
					02,420	13.10	400,000	0.01		0.000		23,000	0.01
1234	1	002604	0 TOMATO JUICE	FLOZ	012,000	0.01	100,000	0.02	0.01	30,000	0.01	02,000	0.01
					010,070	121.20	810,700	0.01		0.000		02,000	0.01
			0 TOTAL JUICE		1,061,430		2,500,000			100,000		870,770	
					\$20,310		\$20,000			\$10,070		\$11,700	
1234	1	002605	0 BUTTER	LB	00,000	01.17	120,000	01.00	0.1000	7,000	01.00	20,770	01.00
					010,000	0.02	010,000	01.10		07,000		020,000	01.00
1234	1	002606	0 BUTTER - GARLIC	LB	10,000	01.54	20,000	01.00	0.1000	5,000	01.00	10,000	01.00
					00,000	1.20	00,000	01.00		00,000		010,070	01.00
1234	1	002607	0 BUTTER - LEMON	LB	10,000	01.01	10,000	01.20	0.2100	1,000	01.00	01,000	01.00
					01,000	0.02	010,000	01.01		01,000		01,000	01.00
1234	1	003010	0 CHEESE	LB	20,000	01.01	30,000	01.20	0.0000	7,000	01.20	00,000	01.20
					020,000	2.00	00,000	01.00		00,000		10,000	01.20
1234	1	003020	0 CREAM	QNT	010,000	1.20	020,000	01.10	0.10	1,000	01.10	010,000	01.10
					010,000	1.20	020,000	01.10		01,000		010,000	01.10
1234	1	003030	0 CREAM - WHIPPING	QNT	00,000	0.00	00,000	01.00	0	0		0	0.00
					00,000	0.00	00,000	01.00		00,000		00,000	0.00
1234	1	003040	0 EGGS	EACH	020,000	00.22	020,000	0.00	0.03	002	0.00	1,000	01.00
					010,010	01.27	10,000	01.20		0.000		01,000	01.00
1234	1	003050	0 MILK	GAL	010,000	1.00	010,000	01.20	0.0000	1,000	01.20	01,000	01.00
					01,000	0.00	10,000	01.00		0.000		01,000	01.00
1234	1	003060	0 ICE CREAM	GAL	01,000	0.77	020,000	02.00	0.0000	0.000	02.50	01,000	02.00
					00,000	0.77	020,000	02.00		0.000		01,000	02.00
			0 TOTAL DAIRY		070,770		077,500			02,500		100,730	
					\$20,470		\$30,000			\$30,700		\$120,300	
1234	1	004000	0 CHICKEN	LB	170,000	0.50	220,000	0.60	0.00	0,000	0.50	43,000	0.50
					010,000	17.00	010,000	0.60		00,000		010,000	0.50
1234	1	004010	0 CHICKEN - BREAST	LB	00,000	01.00	120,000	01.10	0.00	0,000	01.00	00,000	01.00
					010,000	0.00	120,000	01.00		0,000		00,000	01.00
1234	1	004020	0 CHICKEN - THIGHS	LB	00,000	0.00	120,000	01.10	0.0000	0,000	01.10	00,000	01.10
					00,000	0.00	120,000	01.10		0,000		00,000	01.10

RECIPE 2A

MEND MINIMUM REPORT
COMPANY 1234 STORE 0001

MAY 18, 1977 PAGE 0001

ITEM NO	DESCRIPTION	UOM	MINIMUM	LAST PUR	LAST PRICE	ON/HAND
00100	CHEESE CHEDDAR	FLOZ	25,000	07/31/70	0.130	10,000
00100	CANDLES	FLOZ	25,000	07/31/70	0.120	0,000
00100	LITTLE-LEAF	EACH	1,000	07/31/70	0.000	0,000
00100	MILK - LEMON	QNT	1,000	07/31/70	1.000	0,000
00100	EGG - WHOLE	EACH	1,000	07/31/70	0.020	0,000
00100	EGG - WHOLE	QNT	1,000	07/31/70	1.000	0,000
00100	EGG - WHOLE	EACH	1,000	07/31/70	0.000	0,000
00100	EGG - WHOLE	EACH	1,000	07/31/70	0.000	0,000
00100	EGG - WHOLE	EACH	1,000	07/31/70	0.000	0,000
00100	EGG - WHOLE	EACH	1,000	07/31/70	0.000	0,000

RECIPE 2A

MAY 18, 1977 PAGE 0001

FIGURE 22

Cost Analysis

The system has the ability to report by restaurant the period sales, the planned cost in dollars and percent, the actual cost in dollars and percent, the variance between planned and actual cost, and profit in dollars and percent for each menu item.

Various costs are computed as follows:

- On-hand dollar value is divided by on-hand units
- Dollars purchased are divided by units purchased
- Dollars used are divided by units used

Menu item costs are always up-to-date because the system is constantly recalculating the value of inventory.

Cost Analysis Report

The Cost Analysis Report is a unique and detailed comparative analysis of food and beverage costs computed by the system on both a planned and an actual cost basis. Variance between the two is a key factor in identifying problem areas.

- Indicates gross profit and percent of profit by each menu item
- Computes actual unit cost on either the average on-hand price, average purchase price, last purchase price, or average usage price.

Cost Analysis Report with Menu Explosion

The unique menu explosion feature permits the breakdown of each menu item to show the cost of the individual inventory ingredients.

- Aids in analyzing the degree of item profitability
- Alerts management to take corrective action before problems arise

YTD COST ANALYSIS REPORT											
COMPANY 1234 STORE 0801 REGISTER 0801											
JUN 28, 1977 PAGE 0011											
ITEM NUMBER	DESCRIPTION	MENU PRICE	UNITS SOLD	TOTAL SALES	% OF SALES	ITEM COST	PLANNED COST TOTAL	COST ACTUAL %	ACTUAL COST TOTAL	COST %	NET PROFIT
100	SHRIMP COCKTAIL	2.75	2,448	6,732.00	19.77	1.83	4,476.00	46.54	1,839.60	27.50	2,228.40
200	SHRIMP	2.75	2,310	6,352.50	18.80	1.87	4,311.00	46.18	1,877.30	28.71	2,222.20
300	OYSTERS/HALF SHELL	2.15	2,822	6,067.30	17.87	.92	1,800.24	43.80	1,811.60	28.53	2,453.70
400	CRABMEAT BLANCHITZ	4.25	2,180	9,275.00	27.26	2.82	6,117.70	47.92	2,821.70	30.50	2,743.30
500	PROSCIUTTO W/HELM	2.40	2,112	5,068.80	14.88	1.88	2,260.80	45.00	1,101.20	45.68	6,077.60
TOTAL APPETIZERS				11,948	34,645.50	9.05	17,052.00	50.08	17,794.90	52.26	777.90
700	SOFT SHELL CRAB	7.25	2,840	20,640.00	14.05	2.60	9,904.00	39.80	2,422.20	10.11	17,720.80
800	SHRIMP & TURKEY	12.00	4,170	50,040.00	23.40	4.25	17,740.00	30.61	8,267.00	16.52	28,151.00
900	BREAST OF CHICKEN	7.75	4,212	32,643.00	16.48	1.61	8,920.92	10.19	1,409.60	4.32	15,199.10
1000	FILET MIGNON PERLO	10.25	2,180	22,365.00	16.48	1.61	8,920.92	33.05	9,470.40	23.30	17,257.60
1100	RAISIN TURKEY	7.75	2,180	16,985.00	12.21	2.23	4,957.60	28.77	2,216.90	13.06	12,028.10
1200	PRACHED END TURBOT	9.45	2,750	25,987.50	17.69	9.21	19,318.60	59.13	10,241.92	39.41	15,745.58
TOTAL DINNER ENTRE				22,836	194,025.00	52.67	77,890.00	39.13	77,184.90	39.97	878.10
1400	CHEESE OMELET	3.35	6,070	20,434.50	25.12	.81	4,986.56	24.17	1,701.10	8.34	15,000.94
1500	CHICKEN CACON	3.75	9,900	36,975.00	28.64	.81	8,007.12	30.46	1,316.80	3.59	33,658.18
1600	CHICKEN	3.75	9,900	36,975.00	28.64	.81	8,007.12	30.46	1,316.80	3.59	33,658.18
TOTAL				10,220	10,220.00						

YTD COST ANALYSIS REPORT											
COMPANY 1234 STORE 0801 REGISTER 0801											
MAY 18, 1977 PAGE 0003											
ITEM NUMBER	DESCRIPTION	MENU PRICE	UNITS SOLD	TOTAL SALES	% OF SALES	ITEM COST	PLANNED COST TOTAL	COST ACTUAL %	ACTUAL COST TOTAL	COST %	NET PROFIT
1400	CHEESE OMELET	3.35	600	2,010.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	EGGS		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	BUTTER		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	CHEESE		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	LETTUCE		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	DRESSING - SALAD		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	BREAD		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
	BUTTER		2,000	2,000.00	27.41	.81	486.00	24.17	1,701.10	8.34	1,518.90
1500	CHICKEN CACON	3.75	500	1,875.00	27.41	1.33	710.20	35.48	1,316.80	7.02	1,558.20

FIGURE 23

The cash register is no longer just a machine to perform mathematical calculations. With the help of computers, the cash register has become a management information system. It is a tool that furnishes managers with the timely and accurate sales data needed to make the right decisions, decisions based not on intuition or hunches, but on up-to-the-minute accurate sales information.

While there are a great many systems from which to choose, even more will become available over the next few years. Their sophistication will grow and their modular nature (their ability to add or subtract various kinds of terminals) will certainly increase as most of these systems move towards microprocessor-based configurations. A major step forward, we believe, will be made in the ability of the restaurateur to use these systems to produce not just sales analyses and the like, but to produce management reports of the type that now can only be produced on back-of-the-house mainframe computers.

POS systems and ECR's are here to stay and are making it easier for managers to control operations more efficiently and economically. The net result is increased productivity and higher profits. If you are not sure about purchasing a POS system, you should at least make inquiries as to how such a system can benefit your particular operation . . . for it almost certainly will.

needed to tighten controls over operations. Computerized food service operations were becoming an accepted way of controlling costs and increasing efficiency.

COMPANIES BIG AND SMALL ARE REALIZING THE POTENTIAL OF ECR AND POS SYSTEMS

Pizza Hut, Inc., has invested over \$1.5 million to install more than 200 POS systems. And Saga Corporation is also installing systems in its Velvet Turtle chain at a cost of more than \$500,000.

Keith Charly, operator of several Bonanza Steak Houses in Arkansas, indicated that his stand-alone ECR's have given him 100 percent better control of inventory and is helping with scheduling preparation work.⁸

Mike Howell of Burger Chef says, "We have calculated savings with the ECR that are significant. We save \$5 or \$6 a day because there are fewer arithmetic errors. In addition, we save 20 percent on payroll and 40 percent in time spent at the register. I figure we can save another 1½ percent on food cost through the register inventory control feature."⁹

Hot Dog Charlie's operator John Fentekes says, "I was the first to install ECR's in the area and they have more than paid for their cost. The ECR saves me about \$5 a day at each operation in math errors alone."¹⁰

Burger King Was in the Vanguard of the Fast Food Industry's Drive to Adapt Electronic Controls

Burger King was one of the first fast food chains (as early as 1971) to have a two-way computer link-up between each of its 400 company owned stores and its Miami headquarters. A typical Burger King would use a minicomputer under the counter, with cash register terminals plugged into it. According to John Lam-

bert, controller of operations, Burger King was able to reduce food costs by one-half percent through its system.

This was achieved through the inventory control feature. At any time during the day, the system could print out a stock status report in a matter of seconds. The system could be programmed to track inventory usage by menu items and ingredients, employee meals, free and promotional meals, and waste. The system could also be programmed to report on peak sales by hour. Knowing which items were selling at a particular time of day enabled the proper preparation of food in advance of sales; knowing which items were not selling helped managers to determine when more promotion was needed or the replacement of particular items was warranted.

For the fast food industry, the average of cash loss and pilferage from food inventory can run as high as four percent. Burger King, with the aid of its system, was able to reduce its cash loss from .2 to .4 percent to an almost non-existent level of .1 percent of total sales. Burger King's director of operation's systems management, Harold Bechtloff, explained that, "without tight inventory controls, you can't have complete cash control. If a counter girl doesn't enter a sale in the system, her cash drawer will still balance at the end of the day. You must look at your inventory because such sales not recorded will show up as inventory shortages."¹¹

The system was also programmed to do menu item explosions. As sales were made, the system would deplete its inventory lists in accordance with each transaction. For example, when a whopper was sold, the system would reduce the inventory for one whopper patty, a large bun, and portions of lettuce and tomato. Burger King's system was programmed to track 24 items. But a system can be programmed to track as many items as required by the individual operator.

Every transaction was recorded, giving access to all sales and inventory information on request. Reports on finances, sales,

and inventory status provided the manager with the information needed to make accurate management decisions.

According to Lambert there is still another advantage. "You can say that we've freed our managers to manage stores instead of being clerks."¹² At one time Burger King managers had to fill out 26 different forms each day on inventory, sales, variance reports, labor scheduling, etc. With the use of systems these were reduced to one sheet of figures—manager time spent doing paperwork was reduced from three hours to less than one hour. Managers now had the opportunity and information necessary to make decisions based on timely, accurate information, not intuition. Managers now had the information needed to operate an efficient and economical operation.

Kentucky Fried Chicken Has Been a Major Influence in the Use of POS Systems

KFC has invested millions of dollars to install POS systems in approximately 750 units. Edward Chambers, KFC's vice president of finance, estimates savings of .9 percent of sales by using the POS system, and a return on investment of 15 percent after taxes. Chambers believes that the system's major advantage is providing better controls over operations. It gives managers reports on every aspect of the business including:

- sales by individual market
- profit and loss statements
- optional menu mix
- advertising effectiveness
- salary and labor planning
- hourly sales figures

The POS system is basically a management tool that helps control operations more efficiently.

At the KFC unit store level, peripheral terminals are linked to a minicomputer which stores all data. At headquarters, a main-frame computer is used to *poll* the minicomputer (collect and process data) at the store. KFC's system has telecommunications capability too. It takes the system about four hours to poll all of the sales data and generate reports. The reports are sent back to each unit by 10:00 A.M. the following morning.

The Use of ECR's and POS Systems Is Not Restricted to the Fast Food Industry

Table service restaurants are also employing the ECR and POS systems. When Friendly's started its new concept in restaurants, it also installed a POS system. A typical Friendly's has one master and two remote registers. The registers generate the usual sales information (total sales by unit and dollars, menu item sales, inventory status) that the standard ECR provides, but with a particular advantage.

According to Edward Hanlon, Friendly's operations development coordinator, "The more efficient system isn't going to throw anyone out of work. What it will mean is that waitresses have to spend less time on the mechanics of recording an order, and can spend more time attending to the customer."¹³ The additional advantage is a human one; there is more time to spend on customers. This is an indirect benefit for table service restaurants using ECR or POS systems.

Red Lobster Inn's seafood restaurants installed a POS system in their 130 units. At the store level, each restaurant has a minicomputer hooked to a terminal as well as two pre-check terminals in the dining room and one terminal in the bar.

The cashier has a pre-set menu item board with 70 keys which helps to control cash losses. "If a customer walks out without paying, the computer will show this up, because the guest check number will not have been cleared at the cashier's station."¹⁴ The

pre-set menu keys have helped to reduce Red Lobster's error factor, due to cashiers' errors, to 2¢ or 3¢ a day. The net result is maximum control over walkouts, according to H. Colter, Red Lobster's director of data processing, as well as fewer mathematical errors.

The system can also explode the 70 menu items into 300 key ingredients. This enables Red Lobster to control more closely its food costs, usage, waste, and pilferage. Colter also points out that the system has given Red Lobster units instant communication to headquarters (units are located in 23 states) and has made the managers' job a lot easier too.

For the Lerner Corporation, the answer to controlling their 13 different restaurant operations and staff of 500 proved to be a computer system that linked 26 POS's to a microcomputer and a peripheral printer/keyboard terminal. A built-in microprocessor in each register stores all sales and management data during the day. The machines are hooked up to a minicomputer which, at night, automatically communicates with the registers and collects and processes the data. The computer generates a print-out every morning, providing management with combined sales information for all 13 operations, sales reports for each store, and sale by menu item.

In the near future, Leipsner, director of data processing, plans to use the system to track the usage of menu ingredients (menu item explosions). Leipsner says, "The electronic cash register system is invaluable in managing an operation as complex as ours."¹⁵ He believes the major advantage to using the system is the daily sales reports his managers receive. "This report is really a menu abstract which allows us to forecast what our daily production requirements will be for each day of the week."¹⁶

To benefit from POS systems one need not operate a multi-million dollar corporation. The new technology is helping to reduce cost, making the POS system available to the small-sized company as well as to the million dollar corporation.

One independent proprietor, Nat Sergi, owns a restaurant

lounge in Massachusetts, with 200 tables and 20 waitresses. Nat Sergi uses three stand-alone terminals and a built-in microcomputer programmed for several applications. His system is providing better controls over cash losses and inventory. The system is programmed not to operate unless a ticket with a waitress number is inserted into the register. It also stores in memory all guest checks and waitress activity. If there is a walkout, the register will provide the guest check number and the waitress who is accountable. Mr. Sergi reports the categorizing of liquor and food items in open and pre-set department reports has made it easier for him to estimate the menu costs of drinks and food.

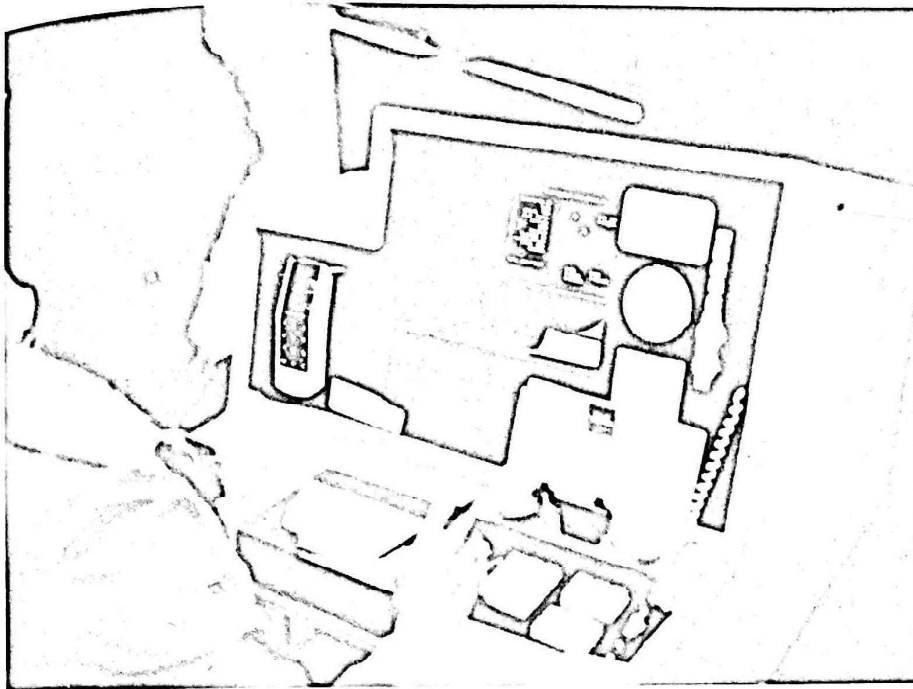
Through the use of a POS system, this individual proprietor is tightening controls over his operation and consequently increasing his profits.

TODAY, MAJOR EFFORTS TO COMPUTERIZE RESTAURANT OPERATIONS ARE UNDERWAY IN A NUMBER OF COMPANIES

The period of initial experimentation seems to be over. Those who began experimenting with computers 15 years ago now use them as a matter of course in their operations. Other companies have undertaken major efforts to either expand or initiate the use of computers on a major scale. The remainder of this chapter describes several of these cases. A detailed explanation of the parts, functions, and uses of a comprehensive computer-based management system used by a multi-unit tablecloth and fast food operator is taken up in Chapter VI.

An Ambitious Computer System Is Installed for Running the Full Service CN Tower Revolving Restaurant¹⁷

The CN Tower, the highest free-standing structure in the world, looms over Toronto's skyline. The Tower Restaurant, the



CN reservation computer

Courtesy of CN Hotels

FIGURE 26

ware. Although amendments to software were needed during the first three years of operation, the original configuration of the system and program applications have remained essentially the same. The cost of the system was, in fact, substantial, especially since research and development were involved. Yet the organized turnover of patrons it generates and the management information it makes available enable the system to pay for itself; labor savings alone, at the level of front-line clerks as well as back-office, assume a good part of the return on investment.

***Lettuce Entertain You Is Attempting
to Match Its Innovative Restaurant Concepts
with Innovative Computer-Based Management Systems¹⁸***

Lettuce Entertain You operates a number of full service restaurants in the Chicago area. The restaurant information system which

it designed was built by Systems Management Inc., of Chicago. Charles Haskell, vice president of Lettuce Entertain You, says, "The purchasing system alone has saved us five percent over last year. And that's not counting inflation."¹⁹

The system is currently composed of payroll, purchasing, recipe analysis, accounts payable, register sales, and inventory subsystems.

Comparative Purchasing System

Being in a large metropolitan area, Lettuce Entertain You has the option of buying from hundreds of vendors, and all the product offerings and current prices would be difficult to take into consideration when purchasing even if they remained fairly static, and prices and product offerings are most definitely not static! Therefore, the purpose of Lettuce Entertain You's module is to organize price, package size, and vendor data so that intelligent buying decisions can be made by experienced management using all the data available. In the Chicago area, a company with 1,000 inventory items will require about four hours of input time per week to keep the information current.

A large number of reports in various sequences are available, depending on how the data is to be used. For example, all vendors of flour can be listed sequentially either by lowest price per pound, by the various package sizes available, by price for each package size, or by the price per unit that this price represents. This system allows managers to make choices no matter what their emphasis—lowest prices, lowest price for a given package size, lowest price for a specified quantity, or lowest price for a vendor who is, for some reason, preferred.

One characteristic of Lettuce Entertain You's restaurants is the very high number of deliveries made. Many deliveries are made for items on the same purchase order. This system allows the organized comparison of invoices for multiple receipts with the original purchase order and the vendor price list.

Payroll

The Lettuce Entertain You payroll system includes the automatic calculation of minimum wage, taking into account tips and meal allowances, and adjustments, which are shown on the check stub and payroll register, to bring employees' earnings to the minimum wage level. Labor distribution and comparative analysis by restaurant, by department, by hours and dollars, and by overtime hours and overtime dollars are produced and each item is presented as a percent of total. This analysis can be done with or without tips, meal allowances, and FICA. The system allows for a single employee with multiple tasks at multiple rates within the same pay period. Special overtime calculation for non-exempt salaried personnel calculate the minimum rate allowed by the code.

The payroll review report shows hours and rate by employee to provide a preview prior to running the payroll. The general ledger is automatically interfaced to all applications which affect it. Payroll distribution, for example, is automatically posted to the proper general ledger accounts.

Efficient transactional input through computer-displayed editing format screens allows payroll to be prepared in about 40 percent of the time formerly required to manually prepare the payroll for outside processing.

Recipe System

The *recipe system* stores the basic formula information for each menu item handled and allows the recall of discontinued menu items. Also stored are the preparation and presentation instructions required to ensure consistency of the product.

Register key codes are contained in the recipe file so that sales data and forecasts by menu item can be used immediately as input to a food item requirements program using the recipe file. Also, the register key code will record automatically the sale of an item if the cash registers are equipped to write tapes.

The current cost of a menu item is automatically calculated,