

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Integrated Information System
Type of Industry Food Processing
Name of User Oscar Mayer & Co.
Madison, Wis.

Equipment Used IBM 1410 Data Processing System
IBM 1401 Data Processing System
Teletype Model 33 ASR Units

Synopsis

Oscar Mayer & Co. is using an IBM 1401 and an IBM 1410 Data Processing System in conjunction with Teletype communications equipment to provide an integrated information system.

The system performs a variety of functions from processing of orders and accounts receivable to determining optimum pork cutting instructions and the setting up of sausage formulations.

Data communications is a vital part of the system at Oscar Mayer & Co. At present, 18 distribution centers transmit sales information to the data center at Madison, Wis.

The firm manufactures microfilm viewers, audio-visual, inter communications and other related equipment.

The integrated information system at Oscar Mayer & Co. provides information on order volume, inventory levels, costs, profit margins and the flow of cash as it comes into the company from the sale of products and is disbursed through payrolls, purchases and other operating costs.

The system is used to create pork cutting instructions (getting the highest yield from each carcass), sausage formulation, control of inventory, market forecasting, engineering analysis, billing and accounting.

Oscar Mayer & Co. is a meat processing firm specializing in sausage and smoked meat products. Some 500 salesmen operate out of five manufacturing plants and 24 distribution centers. The firm supplies more than 25,000 chain and independent retailers with over 800 individual items.

At the firm's main plant in Madison, Wis., there are some 4,000 employees. The company ranks eighth among the leading U.S. meat packers.

The integrated information system at Oscar Mayer & Co. also provides a daily updated master accounts receivable record on magnetic tape that reflects the current status each week, with current balance statements for all customers showing open account items, amounts, invoice numbers and invoice dates.

Data transmission is becoming more and more a part of the integrated information system at Oscar Mayer & Co. Each day, after normal working hours, data transmission devices transmit the day's sales information from 18 distribution centers to the data center at Madison, Wis. Eventually, the data network will provide a two-way communications link between headquarters, the five manufacturing plants and all 24 distribution centers.

THE SYSTEM

The most important function of the integrated information system at Oscar Mayer is the tightening of management control. This is accomplished by having available accurate and current information through regular reports as a basis for decision making.

Information supplied to the computer for processing is punched into cards. Salesmen's orders, for customers in the Madison area, are phoned in to keypunch operators for direct entry on punched cards.

The distant distribution centers served by the Madison data center assemble order information on punched paper tape during the day. Information on the tape is transmitted by the use of Teletype ASR Model 33 units in the evening to Madison where an identical paper tape is automatically punched. This paper tape is processed on a tape-to-card converter which translates the data to punched cards.

Order Entry and Accounts Receivable Cycle

At Oscar Mayer & Co., phone orders or mail orders are keypunched each day into card sets, batched and readied for one of the four scheduled daily order writing runs through the computer. The customer number, route number, sold-and-ship day, the item code and quantity for each product ordered are keypunched by the operator. This information is obtained from the order form that is mailed in or directly from the salesman's telephone call which is recorded. All orders are then verified from the original order form or by the operator listening to the recording of the telephone call.

ROUTE NUMBER	CUST NO	DATE	ITEM 1			ITEM 2			ITEM 3			ITEM 4		
			REFERENCE	AMOUNT	CLAIM NO	REFERENCE NUMBER	AMOUNT	CLAIM NO	REFERENCE NUMBER	AMOUNT	CLAIM NO	REFERENCE NUMBER	AMOUNT	CLAIM NO
00000000	00000000	00000000												
11111111	11111111	11111111												
22222222	22222222	22222222												
33333333	33333333	33333333												
44444444	44444444	44444444												
55555555	55555555	55555555												
66666666	66666666	66666666												
77777777	77777777	77777777												
88888888	88888888	88888888												
99999999	99999999	99999999												
12345678	12345678	12345678												

ROUTE	SHIP DATE	SHIP	AMOUNT	PRICE	QTY	PRODUCT	PRICE									
00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222	22222222
33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333	33333333
44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444	44444444
55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555	55555555
66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666	66666666
77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888
99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999	99999999
12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678

ORDER ENTRY AND ACCOUNTS RECEIVABLE CARDS ARE SCHEDULED FOR ONE OF FOUR DAILY ORDER WRITING RUNS THROUGH THE COMPUTER.

1 CLARENCE RODGERS 011	1 CLARENCE RODGERS 011	1 CLARENCE RODGERS 011
1 BX 812		
011	1 CLARENCE RODGERS 011	1 CLARENCE RODGERS 011
	1 BX 955	1 BX 863
	1 BX 1183 HAM CHEESE	
	1 BX 1910	
	1 BX 887	
	1 BX 1220	
	1 BX 919	
	1 BX 949	
	1 BX 1042	
	1 BX 1142	

THE ORDER PICK-LIST GENERATES AN ORDER-PENDING TAPE.

Each day, salesmen submit remittance advice slips along with their deposits to the company cashier. After verification, the remittance advice is sent to the data center and used as the basis for keypunching payment detail. The payment cards contain customer, route, invoice numbers and payment date. The amount is punched in only where there is a partial payment.

The computer, working with a batch of daily order cards and the master order-writing tape, prints out an order pick-list which is sent to the shipping cooler for filing. Simultaneously, a separate order-pending tape is created.

The order writing magnetic tape contains all needed customer data including coded customer number, route and salesman's number, and address locator's codes. The tape also provides product data needed to fill incoming orders. This includes item number and description, warehouse location, weight and pricing code.

After orders are filled, the completed pick-list comes back to the data center and invoice-release cards are punched to verify actual shipment or note variable weights and any changes in the original order that might have been made by shipping-cooler personnel.

ROUTE	ORDER NUMBER	CHANGE NO. 1		CHANGE NO. 2		CHANGE NO. 3		CHANGE NO. 4		CHANGE NO. 5		CHANGE NO. 6		CHANGE NO. 7		INVOICE RELEASE - OSCAR MAYER & CO.
		LINE NO.	DATA	LINE NO.	DATA	LINE NO.	DATA	LINE NO.	DATA	LINE NO.	DATA	LINE NO.	DATA	LINE NO.	DATA	
000	000000	00	000000	00	000000	00	000000	00	000000	00	000000	00	000000	00	000000	
123	456789	10	1121314	15	16171819	20	21222324	25	26272829	30	31323334	35	36373839	40	41424344	
111	111111	11	111111	11	111111	11	111111	11	111111	11	111111	11	111111	11	111111	
222	222222	22	222222	22	222222	22	222222	22	222222	22	222222	22	222222	22	222222	
333	333333	33	333333	33	333333	33	333333	33	333333	33	333333	33	333333	33	333333	
444	444444	44	444444	44	444444	44	444444	44	444444	44	444444	44	444444	44	444444	
555	555555	55	555555	55	555555	55	555555	55	555555	55	555555	55	555555	55	555555	
666	666666	66	666666	66	666666	66	666666	66	666666	66	666666	66	666666	66	666666	
777	777777	77	777777	77	777777	77	777777	77	777777	77	777777	77	777777	77	777777	
888	888888	88	888888	88	888888	88	888888	88	888888	88	888888	88	888888	88	888888	
999	999999	99	999999	99	999999	99	999999	99	999999	99	999999	99	999999	99	999999	

AFTER THE COMPLETED PICK-LIST RETURNS TO THE DATA CENTER, INVOICE-RELEASE CARDS ARE PUNCHED.

These trigger cards and the order-pending tape are then run through the system to print out the final customer invoice, which in most cases, goes out with the shipment.

DELIVERY RECEIPT										CAR NO.	
SOLD TO										TERMINAL NO.	DRAY NO.
ROUTE 382		CLARENCE RODGERS		011		SOLD TO		SOLD TO		1	
SOLD-TO NO. 22 795795		QUICK CHECK #2		501 TWELFTH ST		WEST COLUMBIA SC		29169		NON-STANDARD BOX WEIGHTS (NET)	
ORDER NO. 203762		TERMINAL NO. 1		DRAY NO. 1		TERMS - NET WEEKLY - PAYABLE WITHIN THE WEEK FOLLOWING DELIVERY. UNLESS OTHERWISE STATED.		SOLD 06 28		SHIPPED 08 31 67	
NO. 01		PRODUCT OM SMOKIE LK SARAN		STD. BX WT. (NET) 900		PROD. NO. 812		QTY. ORDERED 1 BX		LES. FILLED 9 00	
NO. 02		PRODUCT OM SQ LIV CH SLI		STD. BX WT. (NET) 12/1/2		PROD. NO. 955		QTY. ORDERED 1 BX		LES. FILLED 6 00	
NO. 03		PRODUCT OM SQ HAM & CHEESE SLI		STD. BX WT. (NET) 12/6/2		PROD. NO. 1183		QTY. ORDERED 1 BX		LES. FILLED 6 00	
		SM CK HAM 12/6/2		SNS		1910		1 BX		4 50	

THE ORDER-PENDING TAPE PRINTS OUT THE FINAL CUSTOMER INVOICE WHICH USUALLY GOES OUT WITH THE SHIPMENT.

At this stage, the computer is ready to update the master account tape together with payment, claims and credit memo data keypunched from the remittance advice sheets turned in by the salesmen. New customer statements are prepared for each sales route on a weekly basis after the accounts receivable master file updating run. A copy of the customer statement becomes the salesman's remittance advice sheet.

OSCAR MAYER & CO. INC.
FINE MEATS SINCE 1883

STATEMENT (4)
RTE. - ACCT. 008

STATEMENT (5)
RTE. - ACCT. 67 008 096

STATEMENT (3)
RTE. - ACCT. 67 008 096

ATTACH TO PAYMENT (2)
RTE. - ACCT.

OSCAR MAYER & CO. INC.
FINE MEATS SINCE 1883

MO.	DAY	CODE#	NUMBER	AMOUNT	DEDUCTION	TRAN.
08	28	096IN	199700	84.00		
08	29	096IN	199980	186.00		
TOTAL				270.00		

STATEMENT (1)
DATE: 08 31 67
RTE. - ACCT. 008 096

TERMS NET WEEKLY
PAYABLE WITHIN THE WEEK FOLLOWING DELIVERY
MAKE ALL CHECKS PAYABLE TO OSCAR MAYER & CO. INC.

WAIT TO YOUR SALESMAN

BOWENS BAKERY
2007 ATWOOD AVE
MADISON WI 53704

PLEASE REMIT TO YOUR SALESMAN
OR TO

* IN - INVOICE | CM - CR MEMO | OA - ON ACCT. PAYT.
RS - RESALE | OP - OVERPAYMENT | RC - RETURN CHECK
DE - DR. ENTRY | UP - UNDERPAYMENT | EC - ERROR CORRECT'N.

NEW CUSTOMER STATEMENTS ARE PREPARED WEEKLY. A COPY OF THE CUSTOMER STATEMENT BECOMES THE SALESMAN'S REMITTANCE ADVICE SHEET.

The accounts receivable tape lists every customer the plant serves and is updated daily to show current balance by item and by invoice date.

Pork Cutting

At the Madison, Wis., plant, pork cutting instructions -- which determine the size and type of cuts from a carcass -- are specified daily using computer analysis. Each day, data on the available hog carcasses is analyzed to determine the yields and values of various cuts possible using any of a number of cutting instructions. The computer then issues cutting instructions that create the greatest value in raw materials.

Prior to transferring the carcass to a cooler for overnight chilling, weight and grading information is recorded which corresponds to an identification number on each hog. Grading information and identification are entered through a keyboard by an inspector. The weight of the carcass, determined by automatic scaling, is automatically combined with grading information.

At a remote location, input is recorded in the form of paper tape. Data from paper tape is converted to cards at the computer center and the cards are then computer processed to determine cutting instructions. The instructions are specified for light, medium and heavy hogs.

Sausage Formulation

Several times a week the computer sets up sausage formulations for all of the five Oscar Mayer manufacturing plants around the country. In a half hour, the machines assay current ingredient prices and on-hand availability and determine the most economical formulas to maintain uniform product quality standards.

Sausage formulation is an extremely important function of the system at Oscar Mayer. The market cost of sausage ingredients (beef, veal and pork) changes from week to week and occasionally from day to day.

Within limits, each type of sausage can be produced using different proportions of different kinds of meat. The limits are predetermined, guaranteeing constant quality. The computer compares the market price of desired meat cuts to pre-determined proportions that may be used in a particular type of sausage. This process minimizes the total cost of the formula for each type of sausage.

Other Functions

Among the other functions performed by the integrated information system at Oscar Mayer & Co. is engineering analyses of production problems. After the problem has been translated into a mathematical model, the computer analysis can be accomplished in a matter of minutes. In one recent example, the computer analysis was used to determine the number of stainless steel vats to be kept on hand for bacon curing. About 1,000 days of simulated vat usage experience was broken down into a 20-minute computer run. The analysis revealed the optimum number of vats needed to meet day-to-day requirements.

The computer also produces the entire payroll for some 4,000 employees at the home plant.

RESULTS AND FUTURE PLANS

Customer service has been improved and order assembly and dispatching has been expedited. The computers have left little chance for error in product item or pricing, and better stores and product inventory management have produced a much higher customer service level.

When the data network is extended to all 24 distribution centers, daily information will flow from the centers to Madison, Wis., where headquarters' computers will process the data overnight and will handle pricing, billing, receivables and perpetual inventory record updating. The following morning production schedules based on exact replenishment needs will be transmitted to the manufacturing plants and stock situation reports will be transmitted back to the distribution centers.

Oscar Mayer management will also be aware of the exact inventory situation at each of the distribution centers at all times. Predetermined minimum/maximum stock levels coupled with forecasts of market demand will trigger the most efficient replenishment order. In addition, management will be able to schedule production on the basis of actual stock needs, taking into consideration the varying regional and product demands as well as the availability of raw materials, livestock, labor and equipment at each of the individual manufacturing plants.