A BASIC MARKET ORIENTED
MANAGEMENT INFORMATION SYSTEM

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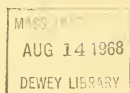
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This paper describes a conceptually simple, totally integrated information processing and control system developed for use by a small company introducing a new product to a difficult to define market. A flexible approach to system development and implementation is illustrated with reference to this example. The system was designed to aid management in 1) defining markets for the product, 2) evaluating the relative effectiveness of alternative means of reaching these markets, and 3) automatically handling clerical functions in the implementation of the marketing program. The design, structure, and operating characteristics of this system which maintains extensive information on each purchaser and known potential customer of the firm at a total yearly operating cost of less than twenty thousand dollars are discussed. Representative uses of the system including sales report generation, advertising media performance evaluations, automatic follow-up letter writing, customer characteristic specification, and marketing cost analyses are illustrated with reference to operating outputs obtained through the use of this system.

This paper is an outgrowth of a chance conversation with the sales manager of a large comsumer product corporation. This gentleman happened to take the seat next to me on a plane and when he discovered that I was from M.I.T. and concerned with computers and management he poured out a tale of woe which began several years earlier when his company became an active combatant in the computer revolution.

My new acquaintance was quick to emphasize his confidence that somehow, some day, the computer would emerge as management's constant companion and be hailed by all as a boon to more efficient planning, astute analysis, and action oriented decision making. His confidence in the ultimate achievement of this millenium when manager and

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machine would move together down the statistically optimal path toward lower risk decisions and higher profits offered little solace to him, in his present travail.

His company's computer had originally been acquired to perform routine calculations relating to payroll processing. This worked out quite well and resulted in substantially reduced costs and improved efficiency. Impressed by this performance, my companion felt that he should examine potential computer applications in his area -- a feeling which had become more acute as the result of comments from the president regarding rumored competitor activities of this type.

Must Life with Computers be Complicated?

In recent weeks he had engaged in a series of discussions with representatives from the applied programming division of the firm from which his company was leasing its computer. He had also talked with the operations research staff of his corporation, the accounting department which had already been through the previously noted payroll implementation, and some computer oriented members of his market research staff. As a result of these discussions, he had reached the following rather frightening conclusions.

1. The language in which computer oriented people communicate is not English. They converse in a combination of abbreviations and esoteria which renders Lewis Carroll's "Jabberwock" colloquial by comparison.

2. Their concepts are totally removed from familiar business problem contexts. They structure problems in terms either too macro to be meaningful or too detailed to be reasonably comprehended.

3. An unbelievable array of statistical techniques is involved in expressing even relatively simple problems in a manner amenable to computer solution.

4. Existing data are all but useless as a basis for analysis using the techniques of computerized problem solving.

5. The computer his company now leases is probably inadequate to handle meaningful management problems. Realistically complex representations may be expected to involve a "large-scale" computer renting for around $650 per hour.

Why, my companion wanted to know, did life with computers have to be so complicated? Couldn't one work with these machines without becoming totally lost in complexities of the type noted above?

How Much Sophistication is Really Necessary?

This discussion and others which followed it, increased my awareness of the problems created by the present emphasis on sophisticated techniques and advanced hardware.

This is not to imply that sophistication per se is undesirable. There is a real need for complexity and sophistication in developing concepts and techniques from which future management applications will emerge and in applying advanced technology in companies where the management is ready to tackle the problems associated with complex systems.

However, it is useful for management to become familiar with reasonably direct and straight-forward computer applications before becoming involved with the technicalities which necessarily accompany more sophisticated endeavors. Evidence to date indicates that substantial profit and competitive advantage can be gained through the use of basic systems which bring some order into situations where

chaos previously existed. In the beginning it is useful to emphasize relatively simple but useful functions which the computer can perform for marketing management. Consider, for example, the computers' 1) performance of repetitive clerical operations at a higher speed and with greater efficiency and accuracy than is possible through normal manual procedures and 2) organization of data which is now at hand but, due to problems of preparation, handling, processing, and analysis is not now influencing management decision making.

Description of a Basic Marketing Information System

As an example of a relatively simple system designed to perform these two basic functions let us consider a small computerized marketing information system developed four years ago for a small company. The firm was entering a new and undefined market with a product which was totally new in concept and function. One of management's most pressing problems was to gain as much knowledge as possible about the market which they were entering. Due to limited finances, they were not in a position to engage in extensive test marketing. It was necessary to promote and sell product while learning about the structure and composition of their market and discovering how to effectively reach and develop it.

Underlying Concepts

Certain functions performed by this system are unique to the company's operations, however, many concepts underlying its design and operation are particularly relevant to the problems posed by my companion on the flight. In this context, the system demonstrates

an approach to the use of small-scale computers as aids to marketing management and may provide a meaningful case study in the economical use of computerized management information systems. It also illustrates four characteristics of successful systems, or perhaps more correctly the environment in which successful systems operate, that should be noted

1. The system is founded on management's conception of the decision environment.

2. The user-manager understands the system structure.

3. The system is based on disaggregated data files.

4. System development has proceeded to increasing levels of sophistication through a process of gradual evolution.

System Reflection of Management Perceptions

If a system is to provide meaningful information to a particular management it must reflect that management's priorities and provide information of a type and in a form which is assimilable in the context of existing management decision processes. Information must be selectively generated - management is simply incapable of assimilating reams of paper - and must be based on accepted measures - output must relate directly to management conceptions of processes occurring in the monitored environment. Factors considered relevant in the decision environment must be defined and differentiated from those to be excluded.

Management Understanding of System Structure

Management must understand and accept the conceptual structuring of system requirements in terms sufficiently explicit to define the measures and analytical procedures to be encompassed by the system.

If this level of communication is not achieved, it may be impossible for those concerned with system formulation to develop a configuration which will be used.

As with any other specialized tool the information system must be carefully designed to meet the specific requirements of the craftsman who will use it and the user must understand its function and capabilities. It is difficult to conceive of a more specialized and highly segmented market than that for management information. The products which have gained acceptance in this market have been one of a kind special orders produced with careful attention to the needs and preferences of the ultimate user.

The Disaggregated Data File

A key element of this and other successful information systems is a disaggregated data file – a file in which information is maintained in detailed time sequence as it is generated. As new inputs are received they are maintained along with existing data rather than replacing or being combined with existing information. As a result, structural biasing through aggregation which destroys much information value is avoided.

The disaggregated customer file contains the name, address, demographic, and financial experience records for particular consumers. Each transaction is recorded in chronological order in the file so that at any point in time it is possible to recreate the company's interactions with each consumer over time. In a similar manner the product file is organized to reference a detailed chronological sales record.

Design Flexibility

Successful information systems are designed to permit expansion and change. As indicated above, the disaggregated data file is a key element in system flexibility. In addition, data files must be designed to permit expansion. Variable, rather than fixed record length file structure and self-expanding file constructs are basic to the well planned system.

As management gains experience in working with well organized and accessible data they become increasingly interested in and prepared to use more advanced analytical procedures. The system's analytical structure must not preclude this advancement. Programs must be organized to permit experimental use of new techniques as well as the permanent incorporation of additional capabilities as part of the standard system configuration.

The Corporate Context

The company which this system was designed to serve hoped to introduce a new product line to diverse market segments. Initial sales were to be generated through media advertising. This promotion was designed to generate orders and requests for further information. Inquiries sent directly to the company or forwarded to it by its distributors were answered with brochures describing the product line. Products were sold both direct and through distributor-retail channels. Literature was supplied to retail outlets but, since the company wished to encourage retailer forwarding of requests for additional information, sales made to customers whose inquiries had been forwarded were credited to retailers even though the customer might order directly

from the company.

Clerical Functions Performed by the System

In context of this marketing situation, the system was designed to perform the following functions normally handled by clerical personnel.

1. Process requests for product information and maintain a record of the name and address of potential customers to whom information was sent, the specific products about which information had been requested, and the referring retailer or distributor, if any.

2. Prepare follow-up mailings to potential customers who did not order or purchase from retailers or distributors during a specific time period following their initial request for information.

3. Process orders received by the company, update purchase records for customers who had previously received information, prepare shipping labels, calculate shipping costs, determine appropriate shipping procedures, and prepare shipping instructions.

4. Handle invoicing and billing associated with all orders.

5. Prepare dunning letters on over-due accounts and prepare appropriate communications for follow-up on consignment shipments.

6. Maintain financial records and prepare financial reports relating to order processing and accounts receivable.

7. Add to the basic customer information file data gained from warranty cards returned to the company by the customers. (It might be noted that the warranty card provided the information required to link purchases made through distributors and retailers to original customer file entries established when information was mailed.)

8. Process specialized mailings based on characteristics in the consumer file.

The primary justification for this system was the computer's ability to perform these functions more efficiently and accurately at a lower cost than clerical personnel. Although the computer ultimately performed many functions which would have been impossible

using manual techniques, it is important to recognize that the system's existence was justified by its ability to perform required operating functions at lower cost. Contributions made by the computer serving as a research agent were bonuses gained by designing the system to organize and maintain information encountered while performing routine clerical operations.

Research Functions Performed by the System

While performing accounting functions the computer develops a valuable resource in records identifying potential customers who have requested information regarding the company's products, purchases made by these individuals, the distribution of sales through channels and direct, and consumer population characteristics derived from warranty card returns. By using a computer system rather than manual procedures, each piece of information can be independently maintained in the detail in which it is generated. New data can be linked to previously generated information relating to a particular product customer or account. Research information must be derived from operating data and presented to management in a form which will facilitate evaluation of market structure and formulation of future company policy.

Specific reports generated by this system include evaluation of:

1. Relative performance of media advertisements based on requests for information and traceable sales to customers who had requested information in response to a particular advertisement.

2. Cost of sales generated by selected promotions.

3. Cost of sales through alternative distribution channels.

4. Demographic characteristics of customers reached through specified media and distribution channels.

5. Demographic characteristics of customers and non-purchasers.

6. Relative performance of brand-models in the product line.

System Capacity and Cost Constraints

The system implemented by this company was capable of maintaining up to four million actual and potential customers in active file for a multiple product line at a cost of under $2,000 per month. Since the operating requirements of the company did not justify leasing or purchasing electronic data processing equipment, the only computer-related equipment on company premises was two card punches. Computer time on a four-tape 8,000 character storage IBM 1401 computer was rented during off-hours at a local service bureau. Substantial cost savings were relaized by using "non-prime" time at the computing center. Input data were prepared during the regular working day at the company office and computer runs made on evenings and weekends.

Examples of System Operation

Normal system operation is summarized in Figures 1 and 2. Incoming mail is separated into five bins. One bin is distributed in the normal manner. The other four enter the computer system. Requests for information are processed by a key punch operator who prepares an identification card containing the name, address, city, and state of

individuals requesting information. Coded entries identify the product for which information was requested and the referenced source of inquiry advertisement or retailer. Media identification is facilitated by coded information request coupons and company addresses in each advertisement.

Orders constitute the second category of computer-processed mail. If a standard computer-originated order form is returned, the key punch operator adds the product identification, quantity ordered and special shipping instructions, if any. Orders received on other than standard forms result are transferred to a punched card order form by the key punch operator.

Payments and merchandise returns are the third category of computer processed mail. Financial control cards communicating relevant information to the computer and linking the payment or return to previous transactions are prepared by the key punch operator. Since this discussion is concerned primarily with marketing functions, financial processing of this type will be largely ignored.

While processing orders the computer prepares warranty cards coded to facilitate future linking of returned cards to customer inquiries in the basic data file. When these cards are returned to the company the key punch operator inserts codes indicating customer responses to questions on the card.

All input preparation steps include both machine and visual verification. This procedure eliminates almost all clerical errors attributable to key punching.

At the end of each input preparation cycle cards are sorted by customer identification to facilitate efficient processing and given to a pre-processor program.

The Pre-Processor

The pre-processor is, as its name suggests, a computer program designed to check the accuracy and logic of inputs prepared for a larger computer system. It is designed to insure that errors which might create problems in actual processing are detected and reported prior to initiation of the main computer run. The pre-processor concept is basic to   efficient and economical system operation.

The sorted data input cards discussed above in combination with control cards directing the large system to perform various functions are reviewed by the pre-processor. The pre-processor checks the logical consistency of both input and control cards, applying a test series designed to detect probable errors. Information punched in the cards is then organized to facilitate efficient processing by the main system and recorded on magnetic tape.

The Main System

The main computer system performs the clerical and research functions discussed earlier. As illustrated in Figure 2, this system receives the input tape prepared by the pre-processor and an "active customer tape" containing records relating to customers and potential customers with whom the company has communicated during recent months.

The system may also interrogate history tapes containing complete records for all actual and potential customers with whom the company has had previous contact.

The main system processes the input tape subject to specified controls referencing historical consumer files and updating active files. Old customers with whom contact is re-established are transferred from the historical to the active file and inactive customers are relegated to the historic file.

The main system produces several types of output which may be categorized in terms of the inputs discussed previously.

In response to requests for product information the machine attempts to identify the consumer requesting information. If a previous record relating to the same individual is found, that record is updated to include the new request for information. If identification fails, a new entry is created on the active consumer tape. In either instance, mailing labels are prepared and coded to indicate what information is to be sent. An order form card is also prepared coded to enable the machine to quickly locate the appropriate customer in file.

In processing an order form card previously generated by the computer, the system locates the appropriate customer in its data file and updates his record to reflect the new order. When processing non-machine prepared order cards the program determines whether or not the customer is already in file and either updates the existing record or generates a new entry.

Shipping labels coded to indicate product, model and number of units to be shipped as well as shipping instructions are automatically produced. Invoices and warranty cards for inclusion with each product shipped are also generated. Prepaid orders are noted and account receivable and billing transactions are established for other orders.

This company made effective use of the system's capacity to prepare personalized letters. The computer was called upon to write dunning letters based on overdue accounts at specified time intervals. It also prepared personalized letters regarding new products to individual customers selected on the basis of characteristics contained in the file. Individuals who had received information as a result of inquiry but had not requested further information or ordered specific products were also contacted automatically.

Standard system generated operation reports summarized actions taken by the machine in each run. In addition to providing a hard copy check on system actions these reports enabled management to monitor the day-to-day flow of activity within the company. Financial reports generated by the system served . a similar function in facilitating management review of profits, sales, orders, and returns.

Research reports based on the customer file aided marketing management in evaluating past campaigns and planning future strategies.

System Performance

A few examples drawn from system operations may highlight its functions as a source of management information.

Although the system generates an array of financial statements, these are not generally relevant to our marketing interests. Two types of operating statements were of particular interest to those concerned with marketing management as a summary of the overall product performance. The quarterly sales summary illustrated in Figure 3 contains a record of product performance during the first quarter of 1962 organized to distinguish between direct and distributors sales.

This simple example serves to emphasize an important characteristics of computerized information systems of the type illustrated. This report summarizing the first three quarters of 1962 was generated on Saturday, March 31 and was released to company management on Monday, April 2. Timely information is available when it is needed by management not three weeks later when the accountants finally get their books balanced.

Figure 4 illustrates a Channel Analysis Report providing the sales manager with a summary of product sales through a particular outlet during the first six months of 1962. Since the system records prevailing trade margins, it offers an estimate of the outlet's dollar

gross margin as well as a summary of unit and dollar sales by product during the indicated period. The sales manager found the gross margin estimate particularly useful when talking to this outlet about next quarter's point-of-purchase display program.

The third column in the report shown in Figure 4 provides another example of the value of a centralized file. The machine processes orders through all channels and, in addition, handles all warranty cards returned by purchasers. It is, therefore, able to estimate product movement through each distributor and estimate existing inventory in each outlet.

As indicated earlier the company using this sytem was interested in evaluating various market segments. Some information could be obtained from invoices prepared by the system. As an example, the analysis of direct sales presented in Figure 5 provides a rough percentage breakdown of sales to consumers, secondary schools, colleges, business, government, and foreign purchasers, during the month of May 1962 for four of the company's products based on a simple category selection rule.

More detailed information regarding market composition was obtained from warranty cards returned to the company by purchasers. Figure 6 provides a sample warranty analysis for a single product based on warranties received during the first five months of 1962. This report summarizes the number and percentage of units sold to each of five age groups. In examining Figure 6 it is important to remember that the information contained in this analysis was

included in the customer file as a descriptive characteristic of consumers who had purchased the product. Thus, at a later time, when the company was ready to market a new product believed to have substantial appeal to 15 to 18 year olds, these data were available as a basis for a selective mailing to consumers within the appropriate age group.

Examples thus far have focused on sales and consumer characteristics. We have yet to take advantage of the media response information generated while processing inquiries resulting from advertising.

Figure 7 illustrates one type of analysis relating of media employed experimentally during the fourth quarter of 1961. This report contains the number of inquiries and sales generated by each advertisement and publicity release appearing prior to December 5, 1961. Advertisements used keyed addresses, and ultimate sales were traced to original inquiries by matching consumer names and addresses from orders and/or warranty cards to original names and addresses on information requests attributable to specific advertisements. Figure 8 orders the advertisements contained in Figure 7 by cost per order produced.

Figure 9 illustrates a summary analysis based on data presented in Figures 7 and 8. This report indicates that during the specific period the average cost per inquiry and per sale was $1.41 and $17.00 respectively while additional mailings would continue to be profitable as long as one out of every two hundred customers mailed was converted to a sale.

Figure 10 reproduces a rather specialized marketing use of this system in conjunction with one of the company's products related to education in computer technology. Because of the relevance of this product to computer technology the company's marketing manager decided to make overt use of the system's letter-writing skill in communicating with potential customers to whom he believed the appeals present in the letter illustrated would be convincing. Although some negative reactions were received from those who did not welcome the machine's overtures, the overall response to this personalized promotion more than justified its generation.

Summary

This system was initially designed to perform routine clerical functions. The data files created to support these functions provided an information resource used by management to aid marketing, planning, evaluation and control. Organization of forms and procedures was tailored to the system. In an attempt to minimize man-machine communication problems attention has been given to such small but important features as automatic verification of all input documentation, the use of a pre-processor, the coding of labels to specify package content, and the generation of identifying labels to be placed on magnetic tapes before they are removed from the computer.

The system exploits the potential of a disaggregated data file. This file containing information maintained in the detail in which it was generated provides a continuous history of company interactions

with potential and realized customers. As a result, structural biasing of data through aggregation which destroys much information value is avoided.

System specifications were developed through management-system designer interaction with maximum emphasis on flexibility. As management gained experience in working with the system they were able to modify and expand its functions and scope. The importance of design flexibility in a system of the type described cannot be over-emphasized. Forethought in the design stage can insure that the system will continue to aid and not constrain management in the years following its introduction.

This case study is in no sense representative of the total potentiality of computer technology. It is intended as a relatively simple example of how marketing management can make use of computers to improve the efficiency of routine clerical functions and gain access to previously unavailable marketing information. By making meaningful information available with speed, accuracy and flexibility this system makes possible more orderly marketing policy and strategy planning and permits decision to be made on the basis of more timely and effectively organized data.

Figure 1

Figure 2

Pre-Processor Magnetic Tape Output

Active Customer Tape

Historical File Tapes*

1401 Computer and Marketing Information System Program

Labels for Mailing Information Requested (Coded to Indicate Mailing)

Order Form Card

Shipping Labels Coded to Indicate Product and Quantity

Invoice

Coded Warranty Card

Labels for Letters

Letters

Operation Report

Research Reports

Financial Reports

Tape Identi-fication Labels

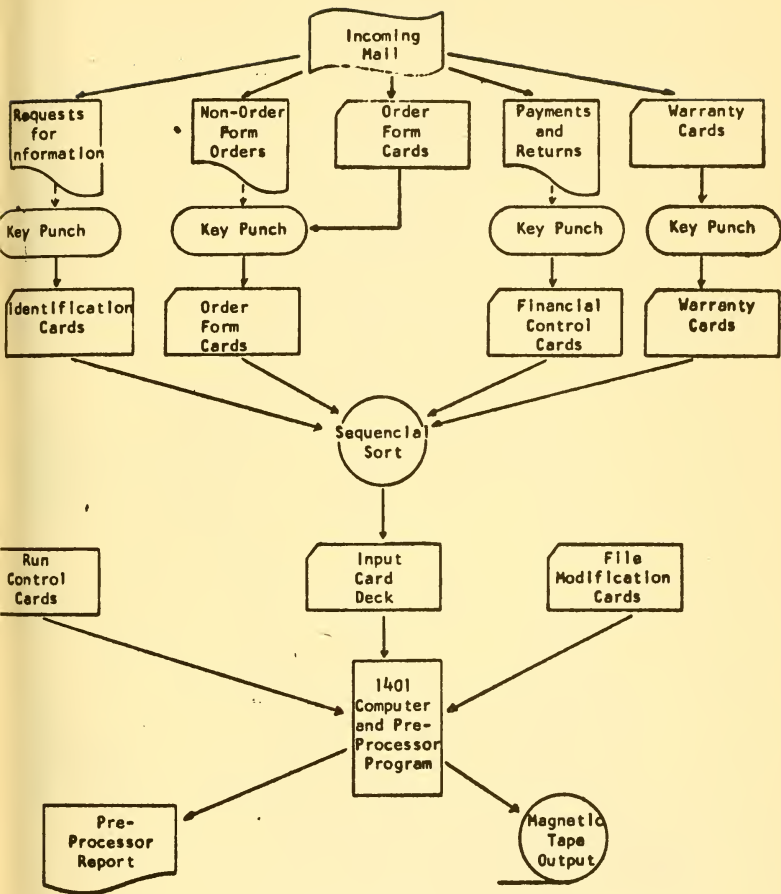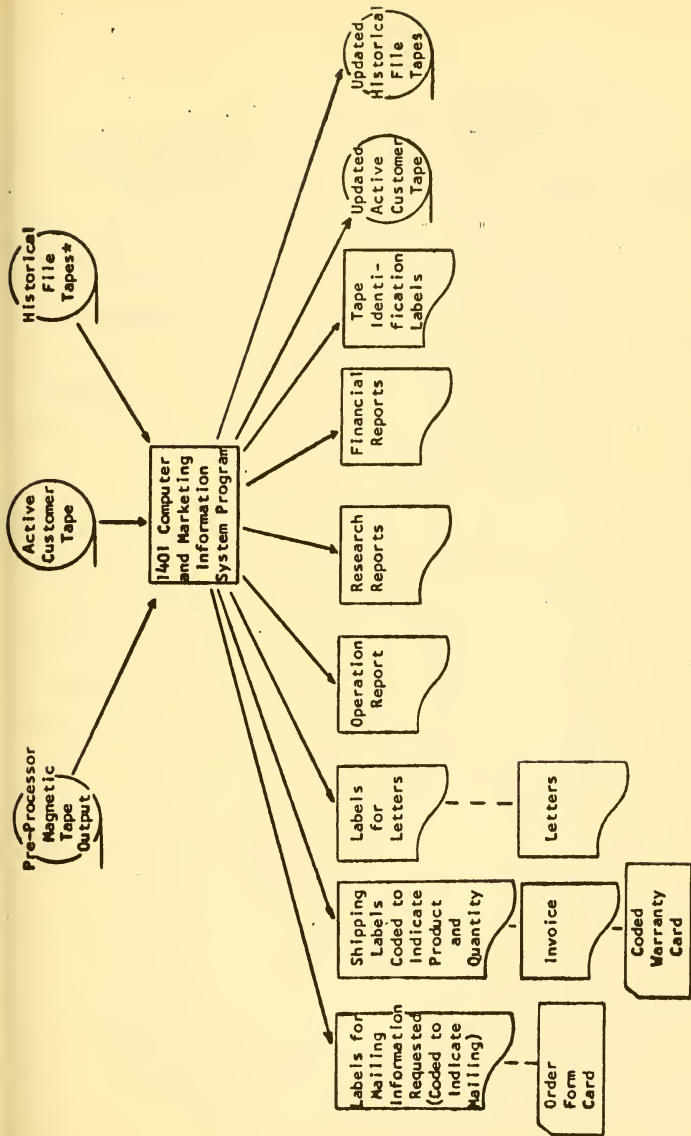Updated Active Customer Tape

Updated Historical File Tapes

*As Requested by Computer

QUARTERLY SALES SUMMARY

ALL CHANNELS SUMMARY - QUARTER 1   YEAR 1962

	JANUARY	FEBRUARY	MARCH	FIRST QUARTER
DIRECT SALES				
-MIN⬛⬛⬛	39,168.00	16,419.50	17,296.81	72,884.31
-MIN⬛⬛⬛	0.0	0.0	1,666.25	1,666.25
-C/R⬛⬛	25.00	48.50	2,705.23	2,778.73
-MAN⬛⬛	370.00	196.00	665.62	1,231.62
-PARTS	49.00	64.31	39.80	153.11
	39,612.00	16,728.31	22,373.71	78,714.02
DISTRIBUTOR SALES				
-MIN⬛⬛⬛	3,376.00	5,856.75	18,278.00	27,510.75
-MIN⬛⬛⬛	0.0	0.0	1,007.50	1,007.50
-C/R⬛⬛	0.0	0.0	31.86	31.86
-MAN⬛⬛	7.0	6.0	13.00	26.00
-PARTS	0.0	0.0	0.0	0.0
	3,383.00	5,862.75	19,330.36	28,576.11
TOTAL SALES - ALL CHANNELS				
	42,995.00	22,591.06	41,704.07	107,290.13

Figure 3

CHANNEL ANALYSIS REPORT

CHANNEL CLASS -- ELECTRONIC SUPPLY - ⬛⬛⬛⬛⬛

DATES COVERED - 01/01/62 THROUGH 06/31/62

TOTAL SALES FOR PERIOD	UNITS	DOLLARS	EST. INVENTORY UNITS
-MIN⬛⬛⬛	158	9,756.50	32.
-MIN⬛⬛⬛	26	2,619.50	8.
-MAN⬛⬛	12	72.00	0.0
-C/R⬛⬛	19	304.00	25.
TOTAL SALES TO THIS CHANNEL		12,752.00	
ESTIMATED CHANNEL GROSS MARGIN		6,883.00	

Figure 4

SALES DISTRIBUTION ANALYSIS -- DIRECT SALES -- PERCENTAGE BREAKDOWN

PERIOD COVERED -- 05/01/62 THROUGH 05/31/62

	CONSUMER	SECONDARY	COLLEGES	BUSINESS	GOVERNMENT	FOREIGN
-MIN▰▰▰▰▰▰▰	48.0	18.0	8.0	9.0	7.0	10.0
-MIN▰▰▰▰▰▰▰	14.0	30.0	22.0	24.0	9.0	1.0
-C/▰▰▰▰	51.0	6.0	10.0	18.0	3.0	12.0
-MAN▰▰▰	12.0	0.0	9.0	3.0	3.0	73.0

Figure 5

WARRANTY ANALYSIS -- UNIT / PERCENTAGE BREAKDOWN

PERIOD COVERED -- 01/01/62 THROUGH 05/31/62

PRODUCT -- ~~████████~~

AGE	UNITS	PERCENT
19 - 18	129	16.9
19 - 25	72	9.4
26 - 35	78	10.2
36 - 45	246	32.2
46 -	239	31.2

Figure 6

CHRØNØLØGICAL MEDIA ANALYSIS

DATES CØVERED - 09/01/61 THRØUGH 01/01/62

REPØRT DATE -- 01/07/62

MEDIA CUT ØFF DATE -- 12/05/61

MEDIUM	INQUIRIES	MEDIA CØST	CØST PER -INQUIRY	ØRDERS	CØST PER - SALE
BUSINESS WEEK-PR1	421.00	0.0	0.0	252.00	0.0
ELECTRØNICS ILL.	316.00	825.00	2.61	36.00	22.92
PØP. ELECTRØNICS-1	1167.00	1640.00	1.41	91.00	18.02
E.D.P. WEEKLY-PR1	4.00	0.0	0.0	0.0	0.0
POPULAR SCIENCE-1	1874.00	3445.00	1.84	123.00	28.01
FØRTUNE - PR1	32.00	0.0	0.0	20.00	0.0
SCIENTIFIC AMERICAN-1	496.00	2310.00	4.66	77.00	30.00
ELECTRØNIC NEWS	92.00	330.00	3.59	0.0	0.0
ABSTRACT - PR1	5.00	0.0	0.0	5.0	0.0
SCIENCE WØRLD	396.00	1350.00	3.41	16.00	84.38
WALL ST. JØURNAL - 1	255.00	880.00	3.45	50.00	17.60
ELECTRØNIC WØRLD	1337.00	1495.00	1.12	55.00	27.18
PØP. ELECTRØNICS-2	1112.00	1640.00	1.47	48.00	34.17
NEW YØRK TIMES - 1	2057.00	3090.00	1.50	191.00	16.18
SCIENCE NEWS LETTER-1	310.00	430.00	1.39	93.00	4.62
POPULAR SCIENCE - 2	2220.00	3445.00	1.55	104.00	33.13
SCIENTIFIC AMERICAN-2	1244.00	2310.00	1.86	213.00	10.85
SCIENCE NEWS LETTER-2	155.00	430.00	2.77	29.00	14.83
TECHNØLØGY REVIEW-PR1	6.00	0.0	0.0	4.00	0.0
AUTØMATIØN	166.00	500.00	3.01	13.00	38.46
SATURDAY REVIEW	61.00	777.00	12.74	0.0	0.0
SCIENCE NEWS LETTER-3	126.00	430.00	3.41	13.00	33.08
PØP. ELECTRØNICS - 3	2873.00	1640.00	.57	97.00	16.91
SCIENCE NEWS LETTER-4	65.00	430.00	6.62	13.00	33.08
PØP. ELECTRØNICS - 4	758.00	1640.00	2.16	11.00	149.09
MATHEMATICS TEACHER	95.00	250.00	2.63	6.00	41.67
DATAMATIØN	445.00	460.00	1.03	6.00	76.67
WALL ST. JØURNAL - 2	98.00	608.00	6.20	22.00	27.64
EL. DESIGN NEWS	289.00	350.00	1.21	11.00	31.82
NEW YØRK TIMES - 2	2940.00	3090.00	1.05	213.00	14.51
NEW YØRK TIMES - 3	2092.00	1989.00	.95	136.00	14.63
ELECTRØNICS PRØDUCTS	26.00	285.00	10.96	4.00	71.25
RADIØ ELECTRONICS	36.00	340.00	9.44	0.0	0.0
INDUSTRIAL RESEARCH	90.00	410.00	4.56	9.00	45.56
FLEET ØWNER - PR1	91.00	0.0	0.0	2.00	0.0
MADISØN AVENUE - PR1	3.00	0.0	0.0	0.0	0.0
BUSINESS AUTØMATION	71.00	360.00	5.07	0.0	0.0
NEW YØRK TIMES - 4	25.00	164.00	6.56	2.00	82.00
WALL ST. JØURNAL - 3	125.00	385.00	3.08	4.00	96.25
SCIENCE NEWS LETTER-5	17.00	90.00	5.29	2.00	45.00
BUSINESS WEEK	93.00	835.00	8.98	4.00	208.75
SCIENCE	17.00	230.00	13.53	2.00	115.00

Figure 7

MEDIA ANALYSIS--COST PER SALE

DATES COVERED - 09/01/61 THROUGH 5./01/62

REPORT DATE -- 01/07/62

MEDIA CUT OFF DATE -- 12/05/61

MEDIUM	INQUIRIES	MEDIA COST	COST PER -INQUIRY	ORDERS	COST PER - SALE
BUSINESS AUTOMATION	71.00	360.00	5.07	0.0	0.0
ELECTRONIC NEWS	92.00	330.00	3.59	0.0	0.0
RADIO ELECTRONICS	36.00	340.00	9.44	0.0	0.0
SATURDAY REVIEW	61.00	777.00	12.74	0.0	0.0
SCIENCE NEWS LETTER-1	310.00	430.00	1.39	93.00	4.62
SCIENTIFIC AMERICAN-2	1244.00	2310.00	1.86	213.00	10.85
NEW YORK TIMES - 2	2940.00	3090.00	1.05	213.00	14.51
NEW YORK TIMES - 3	2092.00	1989.00	.95	136.00	14.63
SCIENCE NEWS LETTER-2	155.00	430.00	2.77	29.00	14.83
NEW YORK TIMES - 1	2057.00	3090.00	1.50	191.00	16.18
POP. ELECTRONICS - 3	2873.00	1640.00	.57	97.00	16.91
WALL ST. JOURNAL - 1	255.00	880.00	3.45	50.00	17.60
POP. ELECTRONICS-1	1167.00	1640.00	1.41	91.00	18.02
ELECTRONICS ILL.	316.00	825.00	2.61	36.00	22.92
ELECTRONIC WORLD	1337.00	1495.00	1.12	55.00	27.18
WALL ST. JOURNAL - 2	98.00	608.00	6.20	22.00	27.64
POPULAR SCIENCE-1	1874.00	3445.00	1.84	123.00	28.01
SCIENTIFIC AMERICAN-1	496.00	2310.00	4.66	77.00	30.00
EL. DESIGN NEWS	289.00	350.00	1.21	11.00	31.82
SCIENCE NEWS LETTER-3	126.00	430.00	3.41	13.00	33.08
SCIENCE NEWS LETTER-4	65.00	430.00	6.62	13.00	33.08
POPULAR SCIENCE - 2	2220.00	3445.00	1.55	104.00	33.13
POP. ELECTRONICS-2	1112.00	1640.00	1.47	48.00	34.17
AUTOMATION	166.00	500.00	3.01	13.00	38.46
MATHEMATICS TEACHER	95.00	250.00	2.63	6.00	41.67
SCIENCE NEWS LETTER-5	17.00	90.00	5.29	2.00	45.00
INDUSTRIAL RESEARCH	90.00	410.00	4.56	9.00	45.56
ELECTRONICS PRODUCTS	26.00	285.00	10.96	4.00	71.25
DATAMATION	445.00	460.00	1.03	6.00	76.67
NEW YORK TIMES - 4	25.00	164.00	6.56	2.00	82.00
SCIENCE WORLD	396.00	1350.00	3.41	16.00	84.38
WALL ST. JOURNAL - 3	125.00	385.00	3.08	4.00	96.25
SCIENCE	17.00	230.00	13.53	2.00	115.00
POP. ELECTRONICS - 4	758.00	1640.00	2.16	11.00	149.09
BUSINESS WEEK	93.00	835.00	8.98	4.00	208.75

Figure 8

ADVERTISING CØST ANALYSIS

DATES CØVERED -- 09/01/61 THRØUGH 01/01/62
MEDIA EXCLUDED -- C/I GREATER THAN $ 30.00

AVERAGE CØST PER INQUIRY = $ 1.41
AVERAGE CØST PER SALE   = $ 17.00

INQUIRY - SALE RATIØ BASED ØN ØNE MAILING = 12.05
AVERAGE INQUIRY PRØCESSING CØSTS FØR   12.05 MAILINGS = $ 3.62
AVERAGE TØTAL MARKETING CØST PER SALE = $ 20.62
BREAK EVEN ANALYSIS ØN ADDITIØN MAILINGS -- CØNVERSIØN =   .005000

Figure 9

███████████████████████ CORPORATION
████ MAIN STREET
███████████, MASSACHUSETTS
DECEMBER 3, 1961

W. F. IGLEHEART
███████████ CO
125 ███████████
NEW YORK   38, N Y

DEAR MR. IGLEHEART

THIS LETTER IS BEING WRITTEN TO YOU ON AN ELECTRONIC
DIGITAL COMPUTER AT A SPEED OF THREE MILLION WORDS PER
MINUTE. THE MACHINE WRITING THIS LETTER IS NORMALLY
USED TO SOLVE COMPLEX SCIENTIFIC AND BUSINESS PROBLEMS
WHICH IT HANDLES QUITE EFFICIENTLY DOING MORE WORK,
MORE ACCURATELY, IN A FEW THOUSAND SECONDS THAN A MAN
COULD PERFORM IN A LIFETIME.

THIS IS PROBABLY THE FIRST TIME YOU HAVE RECEIVED
A LETTER WRITTEN BY A COMPUTER BUT IT IS NOT THE LAST
TIME THESE AMAZING MACHINES-THAT-THINK WILL
INFLUENCE YOUR LIFE. REGARDLESS OF YOUR PRESENT OR
FUTURE BUSINESS OR PROFESSION, IN THE COMING MONTHS
YOU WILL ENCOUNTER ELECTRONIC COMPUTERS DOING OLD JOBS
IN A NEW WAY AND PERFORMING PREVIOUSLY IMPOSSIBLE
TASKS RAPIDLY, EFFICIENTLY.

ENCLOSED YOU WILL FIND INFORMATION DESCRIBING THE
███████████-- AN EXCITING NEW PRODUCT CONCEIVED BY A
███████████ ON THE ███████████ AND PRODUCED
BY THE ███████████ CORPORATION. THIS DIGITAL
COMPUTER SIMULATOR MAY BE PURCHASED COMPLETE WITH ████
███████████ FOR ███████████ DOLLARS.
YOU MAY WISH TO CONSIDER ███████████ AS A THOUGHTFUL
GIFT FOR THE INQUIRING MINDS ON YOUR CHRISTMAS LIST.

                        SINCERELY,

████████   ███████████████████████

Figure 10