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# Advertising Control: a Computer Application

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The sheer volume of data makes it easy for advertising plans to go out of control in a multi-product company. Yet many of these companies have computer time available. Here's a simple EDP program that can offer good ad control —

## ADVERTISING CONTROL: A COMPUTER APPLICATION

by William T. Kelley University of Pennsylvania

**I** N A MULTI-product company with a number of separate advertising budgets it is difficult to control advertising expenditures. Yet some kind of control system must be instituted if the advertising effort is to be planned, directed, coordinated, and evaluated effectively.

Fortunately, the development of electronic data processing has greatly simplified this problem. The computer is ideally suited for tasks that involve the rapid manipulation of large quantities of data.

September-October, 1967

This article describes a computerized system for control of advertising expenditures that was developed for a large, diversified manufacturing organization. The system provides current budget control, costing information, accounts payable control, auditing reports, and statistical analyses of various kinds. Although it was designed for a large decentralized company, it also may have application in smaller companies where advertising is a significant part of the sales effort. The company in which this system was instituted has a number of manufacturing divisions and a central advertising department that services the various operating departments. The products are divided among a number of product managers. A product manager may have only one product to market if the product is an important one as measured by its sales volume or its contribution to profits—or he may have several (generally related) products if they are small and need less market planning and

## The advertising program can be modified as required, and a number of ...

supervision. Sometimes a marketing manager oversees the work of several product managers. The latter also work closely with the appropriate sales managers, who direct field sales forces.

#### **Product groups semiautonomous**

Each product or product group has its own marketing plan and its own advertising budget. Before the advent of the computer, detailed and timely budget control was difficult. Each advertising manager of a product or product group had to maintain his own records and controls, subject to the fiscal limitations imposed from above. Some did it well, some adequately, some poorly, and some not at all. Top marketing management never knew where it stood, for it was difficult to obtain an accurate picture of the whole advertising effort-how the plans were progressing, where the money was being spent, how much money was left in the authorized budget, how much was committed, and the like. Moreover, it was difficult to obtain an independent check of agency bills, media charges, printing and typography bills, and other expenditures for outside materials and services.

Later the company centralized its control and installed a hand tabulation system, run by a large



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his B.A. degree from the University of Toronto in 1941 and was awarded his Ph.D. from the University of Pennsylvania in 1951. He is a member of the American Marketing Association and the American Economic Association and a fellow of the Royal Economic Society, London. number of clerks. The clerks handposted to ledgers and drew data from the ledgers. Fifteen years ago advertising control was shifted to a punched card system. This made it possible to generate data more effectively, but the equipment provided what was mainly a data processing system rather than a means of analyzing and interpreting data for management control purposes.

### **EDP** background

The company has had a computer center for more than a decade. There are three high-capacity computers of different vintages, all knit together in a compatible system that in total has a very high capacity. The advertising control system requires only a small fraction of the total time available on the computers, so that the chargeback for computer services to the advertising department is surprisingly modest, considering the rich output obtained.

The computerized advertising control program was instituted in 1960 and built up gradually over the past several years. By now, as will be seen, a rather elaborate program has been built into the computer. It can be modified as required, and a number of specialized reports have been added without much difficulty.

New input data are accumulated and fed into the computer once a week. The system as it now stands is shown in Exhibit 1 on page 43 and Exhibit 2 on page 44. The input feeds into the left side of the diagram in Exhibit 2, manipulation and calculation processes take place in the middle of the diagram, and output emerges at the right.

The computerized system is run by virtually the same number of people as in the hand tabulation days although the volume of data processed and reports produced has grown by a factor of about ten times since then. Thus, productivity per person in the section has multiplied many times, and personnel are used for quite different purposes, as will be explained later.

The best way to understand the advertising control system is to look first at the input—what kinds of data go in-and then to consider the output—what kinds of statistical tabulations and reports are produced and what use they are to management. Input items are listed in Exhibit 3 on page 45, output items in Exhibit 4 on page 47. The details of what happens in between, the data processing, will not be discussed here since the object of this study is to see the kinds of data useful to marketing management that such a system can produce rather than to show how the data are manipulated and processed.

#### Appropriation and budget data

Each advertising manager is responsible for developing the budgetary proposal for the product or products for which he is responsible. He figures each budget for one year; it is reviewed quarterly. The product manager, in collaboration with the sales director, develops his marketing plan for the product, clearly stating the marketing objectives for the next fiscal year.

The advertising manager takes the marketing objectives and determines the part that advertising should play, in his opinion, to achieve the stated objectives. He translates this into specific tasks to be performed, developing an advertising plan for the product. He then decides which advertising instrumentality – space advertising, broadcast, direct mail, sales aids, etc. – can best perform each task. He also figures out how much supporting product publicity, which will be supplied by the public relations department, will be needed. He then quantifies the plan in order to help achieve the marketing goals: How many pages of magazine advertising are required? How many spot television impressions? How many flip boards, brochures, price lists, etc. will be necessary to aid the salesmen in achieving the sales goal? The advertising agency often assists the advertising manager with his advertising plan, especially when it comes to working out the media part of the plan.

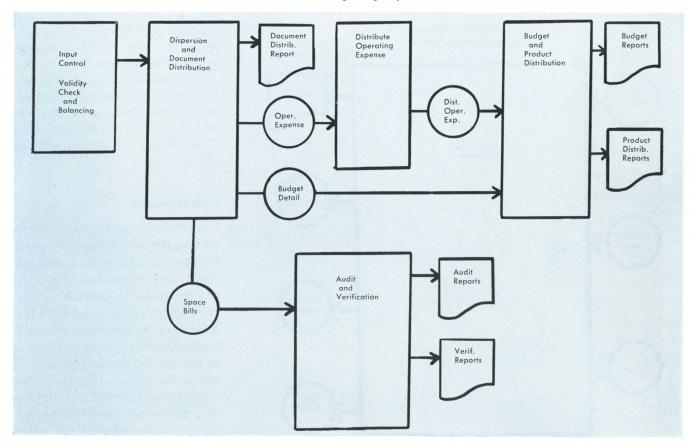
Then the various units are given prices and converted into dollar amounts. A full-page advertisement in a certain magazine costs so much per page, and we will use X number of pages; creative work will take so many man-hours of art service, so many man-hours of copy work, etc. The advertising agency estimates that it will need so much for other services, and so forth. A copy platform is worked out by agency and advertising manager, and it becomes the creative guideline in the advertising plan.

After the advertising tasks have been priced out, the budget proposal is put together and taken by the advertising manager to the sales director and the product manager. These executives may modify proposal. Frequently the the amount requested for advertising a product is deemed too great or is out of line in view of all other requests from the other advertising managers. The product manager knows what he plans to sell and how much he plans to make per unit after deducting manufacturing costs. Therefore he knows the gross margin for marketing and profit on the product he has to work with. He and the sales manager also have ideas, based on past experience, about what is "normal" to spend for such a product (say, 2 per cent of sales). He also knows that he must hold all expenses down to rock bottom, just enough to do the job but no more, if he is not to impair his profit margin and return on investment.

Thus, the advertising manager, using the task method, builds up his estimate of what he thinks needs to be done and how much it will cost to do it that way. The product manager must balance all elements in his marketing mix sales expense, sales promotion costs, and public relations support as well as advertising. Thus, in a sense the

#### EXHIBIT I

#### Accounting Department Data Processing—Budget System



September-October, 1967 Published by eGrove, 1967 advertising Manageneitu Eduvices A Magazi Attor Flarmal gasysteral, and bondrols, verport 9639, originality 7 planned, but the bottom up, and the product manager figures from the total plan downward. The latter knows what he can afford to spend, and this is the top limit of the advertising budget. If the advertising manager's proposal is no higher than that limit, he is all right, although his plan may be criticized on other grounds. If he exceeds the limit, he must have a strong justification for his proposal, indeed so compelling as to convince the product manager and his superiors to appropriate the extra funds. This seldom happens; usually the advertising manager must revise his proposal so as to cut it back.

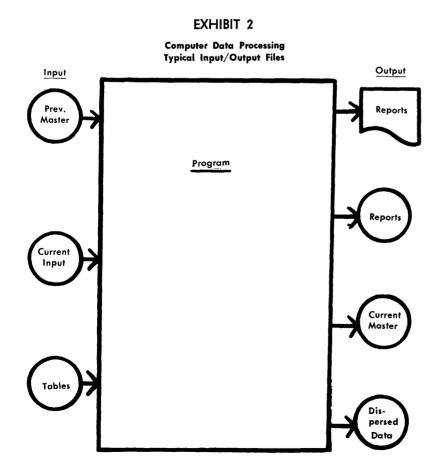
After the product and sales managers have approved the advertising budgets, they go to the head of the manufacturing division for approval or revision. Then they go up to the executive and finance committees for final approval. Once that has been obtained, the advertising department has the authority to expend the funds.

vertising budget becomes input to the advertising control system. The authorized sum is broken down according to plan by product line or brand and by each type of expenditure-print media, broadcast media, production (cost of printing, typography, plates, etc.), sales aids, direct mail, department overhead (share of).

## Allocation shifts possible

"department authorized" This column (see Exhibit 5 on page 48) becomes the control against which the advertising control people test actual expenditures. It is calculated for the whole year at the beginning of the fiscal year and fed into the machine. It is reviewed monthly by the advertising manager and altered as new market developments occur. The altered estimates the "current estimate" become column.

Perhaps the product in question does not need as much direct mail



a competitor is hurting the share of the market enjoyed in New England. After approval by the product manager, the advertising manager can reduce the current estimate for direct mail and increase the amount for spot television, which will beef up advertising support in New England where it is needed.

The advertising manager may make such shifts among items in his budget as long as the total amount authorized by top management is not exceeded by more than a certain percentage. This percentage is like a reserve, giving necessary flexibility to the budget while at the same time maintaining budgetary control over advertising expenditures generally. The advertising manager can also run over his budget in some periods and make up for it by running under at other times. The changes in the budget estimates in the form of a letter from the advertising manager are fed into the computer as they are made, thus keeping the input in the "current estimate" column as current as possible.

Every quarter the product manager, sales manager, and advertising manager get together for a quarterly forecast. Business for the product is forecast for a year at every forecast session. At this time, alterations in the sales forecast may necessitate changes in the estimated expenditures for advertising. This change, too, gets into the input system.

## Commitments

As the budgetary period progresses, the advertising manager or his advertising agency makes contracts and agreements for space or time in media, creative services, printing, typography, and the like. Whenever a firm commitment is made, this fact, properly classified to the appropriate budget number by media, sales aids, and other categories, is entered into the system. The prime document input is the purchase order of the advertising department or its equivalent.

As soon as the delivery of a prod<sup>2</sup> uct or accomplishment of a service is made under a commitment and the supplier sends his bill and it is verified and paid by the treasurer, this fact becomes input and is classified as expense against the budget applicable. At the same time the amount is removed (debited) from the "commitment" category.

#### **Overhead**

Each advertising budget must be charged with its proportional share of the general departmental overhead. This includes input of rental of office space for the department and cost of joint facilities such as salaries of the department head, his assistants, and secretarial staff; storage of materials; etc. The estimated amount of overhead is programed into the system together with instructions on how to allocate the overhead to the advertising budgets.

#### **Tabular** instructions

As in any data processing system, instructions are programed in as to what calculations to make, what tables to produce, and the like. This remains programed in the computer, and changes are entered as appropriate.

#### Input control and validity checks

A batch control system is used to cross check and test the accuracy of the input data. Other validity checks are imposed, such as numeric document checks and checks to make sure that direct expenses (e.g. space bills) are not charged to an overhead account, etc. It is important to have such checks on the quality of the input since errors will creep into any system.

#### Monthly budget report

The principal output of the system is the monthly budget report, which is the basic advertising conertising Control: a Computer Application trol report. It is worked up monthly

and is distributed to each advertising manager and product manager. It shows these executives exactly how their campaign is progressing.

The report breaks the funds down by product and type of expense (space, time, direct mail, sales aids, production, agency fee, etc.) and lists individual projects (e.g., XYZ campaign). The user of the report can run his eye across the column (see Exhibit 5) and see how much was authorized, the revised monthly figure, how much was committed (under contract agreement of some kind), how much was spent, and the balance unexpended as authorized by the budget.

This report has a number of uses: The advertising manager can see precisely how he stands - how much of the budget is authorized to be spent on each item, how much has been committed and expended, and how much remains to be spent. He can evaluate the progress of the campaign as a whole and of each part of his program. He can take action on parts that are lagging or slow down action on parts for which the funds are getting thin. It gives him a check on his agency's performance. That part of the campaign that is the responsibility of the agency can be perused and analyzed. Parts behind schedule can be highlighted for questioning.

Expenses running over the estimate can be probed into. The report flags the advertising manager down when he is overspent. If so, he must either stop future commitments or collaborate with the product manager to shift funds from other items in the budget to the one in trouble. The report also alerts him when he is underspent. He can then increase commitments for the item or shift the funds to some other place in his budget that needs help.

If the whole budget is reaching the "peril point," the limit allowed by top management for overexpenditure, say 10 per cent of the

Advertising Budget System Input Types						
1. A	— Forecasts of Expenditures and Corrections to Audit and Verification Masters					
2. B1	Executive Committee Au- thorizations					
3. B2	— Department Authorizations					
4. B3	— Current Estimates					
5. C_	— Commitments					
6. E_ & F_	– Expenses Against Documents Identified by Source A. JEV's, CEV's, APV's, etc.					
7. P1	— Print Indicators					

### EXHIBIT 3

total, he can then take quick steps to find out why. Perhaps it is because of inflation in prices of media, printing, or other services provided for in the budget. The reason may be uneconomical behavior by the agency. It may be poor management on his part—he simply has failed to keep proper account of things. Whatever it is, he can diagnose the trouble and take steps to correct it. This report gives him a sensitive and current indication of his status.

The report also indicates which part of an advertising campaign is coming along according to plan and which part is behind schedule. For example, on a calendar year basis, the July report may show that about 50 per cent of the total budgeted amount for magazine advertising has been spent on product X, just as planned, since uniform pressure is to be maintained on its market. But the figures reveal that only 20 per cent of the direct mail part of the plan has been expended. This leads the budget accountant and advertising manager to wonder about this figure and to investigate why it is so low. Sure enough, someone has "goofed" on that program, and attention must be paid to it in order to "pull it out of the fire."

Finally, the detail of the various items gives the advertising manager a chance to audit the charges if he wishes to do so. He probably will not do so since, as we shall see, The advertising manager can use the report to brief the product manager on the advertising program. From the briefings, the product manager can compare the progress of the various programs. He can spot areas that need his attention peril points, underexpenditure, obviously poor progress of a campaign, etc.

The control section monitors the monthly report and brings excess expenditure situations to the attention of the relevant budget administrators. Thus, it exercises independent budgetary control and can flag down difficulties that otherwise might be missed by management.

## Budget detail report

The budget detail report is prepared monthly at the same time as the monthly budget report. It gives the detail by individual vouchers of all advertising expenditures. It is used as an auditing tool by control and is an excellent cross reference. An internal report, it is not ordinarily distributed to the advertising product managers.

## **Product** distribution report

The product distribution report has the same detail as the monthly budget report, but it is broken down by end use for important categories of products. It allocates direct expenses by each individual product. This gives the product managers control over advertising expenditures by each brand or product type. It aids them in calculating expenses against volume and in forecasting profit for each item for which they are responsible.

## **Document** distribution report

A segregation of commitments and expenses is run to report on each advertising subcontractor of the company-advertising agencies, cooperative advertising contracts, direct mail firms, and the like. Job costing by purchase order is shown. This affords independent checks on the charges of suppliers. The progress of the cooperative advertising campaign is shown — amount committed or allowed for each account, account claims to date, amount unexpended. This report enables the advertising manager and sales director to check whether an account is overexpended or underexpended. In either case, follow-up action by a salesman with the contractor may be instituted.

## Audit and verification report

The audit and verification report, a system to audit media charges, shows authorized and actual expenditures segregated by each advertising medium utilized. The report is distributed by budget number. The advertising manager responsible for the budget analyzes the report and verifies that each item shown has been delivered (or the ad run) as shown. Notation is made of exceptions. An exception might be black and white instead of color, wrong rate, wrong unit (full page instead of half page), etc.

Independently of the advertising manager's audit, the control section gets a tear sheet or station affidavit showing that the advertisement or commercial was run. The two audits may not agree. Suppose, for example, that the advertising manager has signified on his statement that the advertisement has been run in a certain magazine, but the control people have received no tear sheet or other evidence to verify it. Then the discrepancy is brought to the attention of the advertising manager.

The control personnel, who are specially trained in media rate structures (i.e. quantity and frequency discounts), audit the rate charges. Two rate auditors check agency bills to analyze whether the company has been accorded the best rate. They also look for good

One company that has had an EDP control on its advertising allocation and expenditures for about a year now is the Armstrong Cork Company. Armstrong uses a "Control Card" for each category of advertising activity rather than an overall "Budget Report" as is suggested here, but in principle the two systems work in very much the same way.

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buys. For example, they may note ucts to the benefit of other prod-Kelley: Advertising Control: a Computer Application that an advertising manager has ucts. that an advertising manager has run eleven advertisements in a magazine. By running a twelfth advertisement, he can qualify for an additional discount. The discount earned may all but cover the cost of the last advertisement. The control auditors will bring this situation to the advertising manager's attention. The computer cumulates the number of magazine pages used, newspaper linage, number of insertions, dollar disbursements by each medium, and the like. These totals are used by the auditors to check that the best rate, in view of quantity and frequency discounts, has been obtained. Auditors use rate cards, Standard Rate and Data Service, and rate contracts from media as their basis for the audit.

The audit also can reveal other discrepancies – the wrong unit charged for or cases in which the advertising agency was underpaid or overpaid for service charges, fees, etc.

For cooperative advertising, advertising control personnel audit to determine whether claimants have billed at the proper rate, e.g., whether the store has billed at the lower local rate or at the considerably higher general (national) rate. It also checks the validity of claims on the basis of sworn statements from radio or television stations that the spot announcements have been aired, publishers' invoices, tear sheets of advertisements, and other evidence that the advertisements in question are bona fide.

#### **Operating** expense report

The operating expense report provides a detailed breakdown as to how the advertising department overhead is distributed to advertising budgets and to products. If an advertising manager thinks his share is too high, he can spot where he thinks charges are excessive and perhaps get an adjustment. Top management can see how the overhead has been allocated and whether it unfairly penalizes the profits of some prod-

#### **Other** reports

Since the basic input is available on the tapes in such great detail, almost any breakout that management wants can be provided. Several have proved useful to the marketing executives:

The agency expenditure tabulation is an independent check in great detail covering every expenditure made by the advertising agency on behalf of an account and costs billed to it for agency services. This makes possible a detailed audit of agency charges and provides good surveillance of agency cost performance.

The cooperative advertising tabulation recapitulates much of the material discussed above but affords additional detail. All accounts are printed out, and the status of each account's authorization, expenditures, and balance is given. It is most useful in controlling the always vexatious cooperative advertising program. Both sales and advertising managers are interested. The regional sales executives can be sent copies involving their particular accounts for information and follow-up if they wish.

For the duplicate payments report the machine is instructed to match all payments by time and amount. It will print out all cases in which two ostensibly different bills were of the same date, were of the same amount, and/or were paid the same day. This simple comparison, so easy for the computer to make, has uncovered scores of overpayments and has been well worth the trouble and cost of making the run.

#### Additional advantages

There are other advantages that can result from computerization. One is payment control. Media bills from the advertising agencies are matched up with advertising department purchase orders and media schedules. If there is no match, payment is not authorized. This provides a check on the overpayment of agency bills or on unauthorized payment of the same. At the same time the computer makes a simultaneous distribution of overhead to budget accounts.

The system permits complete verification. Advertising control goes back to check after the fact.

**EXHIBIT 4** 

	Advertising Budget System Reports							
1	. Input Control							
	A. Input listing							
	B. Group totals							
2	. Document Distribution							
	A. Document number, description, and distributions							
	B. Current and to-date commitments and expense							
	C. Commitment balance							
3	. Budget and Budget Detail Reports							
	A. Department authorized and current estimates							
	B. Commitments and expense							
4	. Product Distribution							
	A. Budget and product code, description, and current estimates							
	B. Commitments and expense							
5	. Audit Report							
	A. Publication name and code							
	B. Contract period							
	C. Invoice number and date, budget code, production orders							
	D. Insertion date, description, actual and forecast amounts							
6	. Verification Report							
	A. Publication name and code, number of times ad is to appear							
	B. Invoice number and date, insertion date							

C. Actual and forecast amounts

3382 REV	1-61		ADVE	RTISING BUDGE	T REPORT	•	IOM ADVERTISING DEPT, - CONTR	OL SECTION
Management Services: A Magazine of			Management Services: A Magazine of	Planning, Syste	TREPORT ems, and Controls, Vol. 4 [1967], Nevery treet. / MONTH 2, 1964 850,000			
Â	ACCOUNT CHARGE		DEPARTMENT AUTHORIZED	CURRENT Loss ESTIMATE 1	CURRENT LOSS COMMITMENTS LOSS EXPENSES Equals BALANCE			
746 746	12 12	100	TRADE MANUFACTURER TRADE PREP MANUFACTURER	37,200 10,000	35,600 8,820	21,463	1,845	12,292
746	12	901 902	TRADE 42345	10,000	400	780	414	14-
140	146	902	TRADE 42567	47,200*	45,600*	22,243*	2,259*	21,098*
746	20	100	CONSUMER	56,400	78,600	1,562	58,830	18,208
746	20	900	CONSUMER PREP	8,600	3,440			3,440
3746	20	901	CONSUMER 42781 CONSUMER 42843		2,420 2,740		2,294	126 65-
			TOTAL	65,000*	87,200*	1,562*	63,929*	21,709*
746 746	40	100	RADIO	40,000	35,000		33,071	1,929
740	40	900	RADIO PREP TOTAL	1,000 41,000*	1,500 36,500*	*	1,202 34,273*	<u>298</u> 2,227*
746	51	100	TV TIME NETWORK PARTICIPATION	500,000	380,000			380,000
746	51	101	THE NURSES		50,000	49,900		100
746 746	51 51	102	MONDAY NIGHT AT THE MOVIES ROUTE 66		40,000	15,100	40,040 14,000	40- 900
746	51	900	TV COMMERCIAL PRODUCTION	70,000	49,600			49,600
<u>746</u> 746	51 51	901 902	TV PREP 456789 TV PREP 456790		9,500	10,947	9,400	<u>100</u> 47-
/ <del>4</del> 0			TOTAL 450190	570,000*	570,000*	75,947*	63,440*	430,613*
746	53	100	TV TIME - SPOT	80,000	80,000	1	55,000	25,000
	1		TOTAL	80,000*	80,000*		55,000*	25,000*
746	61 61	205	DMPM GENERAL MAILING NO. 1	3,000	3,500		3,507	7- 10-
746	61	210	DMPM GENERAL MAILING NO. 2	<u>3,000</u> 1,200	<u>3,500</u> 1,200	1,109	3,510	91
746	61	405	DMPM AD REPRINTS	1,200	1,200	1,187		13
			TOTAL	8,400*	9,400*	2,296*	7,017*	87*
746	70 70	105 110	EXH. ABCD SHOW EXH. EFCH SHOW	4,000	4,500 6,200	700	4,509 5,500	9-
746	70	900	EXH. WAREHOUSE	3,000	3,000	1,000	2,000	
746	70	990	EXH. GROUP SERVICE	1,200 14,200*	1,200	300	<u>900</u> 12,909*	9_*
			TOTAL	14,200*			12,909-	
746	90	100	RESEARCH TOTAL		10,000	10,000 10,000*	+	*
746	98	100	OPERATING EXPENSE	24,200	24,000	8,000	16,000	
1	1		TOTAL	24,200*	24,000*	8,000*	16,000*	*
746	99	100	AUTH. INCR. PER FORECAST	50,000				
746	<u>99</u> 99	200	AUTH. DECR. PER FORECAST TEMPORARY CHARGES	25,000-			201	201-
	-		TOTAL	25,000*	*	*	201#	201-*
			TOTAL	875,000**	877,600**	122,048**	255,028**	500,524**

## **EXHIBIT 5**

Before the computer it was impossible to go back and check every invoice; there were simply too many for more than spot checking. Now literally every invoice can be checked for validity, duplication, and correct discounts.

The system frees people for creative work. Before the computer system most of the efforts of personnel were occupied with the physical task of running the system, processing papers, and compiling reports. Now, most of the energies of the personnel are devoted to analysis and interpretation of the data. True control is assured. Moreover, people now have the time to plan for different reports, new ways of checking, additional by-product reports of further aid to management, and the like. This extra time for thinking about applications of the system has made the system much more valuable to management and pertinent to its problems.

### Conclusion

Automated expense control systems using computers are feasible and have been of great utility in exercising cost control and in implementing sophisticated auditing procedures for advertising expenditures. Provision of current information in great detail has enabled advertising and product managers to take corrective action quickly and decisively as emergency situations develop. It has facilitated advance planning and has made possible an effective follow-up on the progress of the advertising plan as it is worked out during the budgetary period. Surveillance by several independent offices-advertising, product management, advertising control makes it less probable that overcharges, omissions, and the like will go undetected. Smaller organizations could certainly benefit from such an advertising control system, but it has become a "must" for the large, decentralized, multi-product company where, because of their number, marketing programs can easily get lost in the shuffle.