Gary L. Lilien, Alvin J. Silk,
Jean-Marie Choffray, and Murlidhar Rao

Industrial Advertising Effects and Budgeting Practices

What is known about the effects of industrial advertising? And how does this information affect budget decisions?

THE industrial sector has long been regarded as the stepchild of marketing in terms of the amount of research effort devoted to its problems. There are, however, indications that the situation may be changing. Research on industrial/organizational buying behavior is growing, and a considerable body of empirical knowledge about processes surrounding the innovation and diffusion of industrial technologies and products has been developing.[1] This article is concerned with a different set of issues: those surrounding the determination of expenditure levels for industrial advertising. The purpose here is two-fold: (1) to review the available research relating to the effects of industrial advertising, and (2) to examine practices currently used in budgeting industrial advertising in light of what is known about advertising response and costs in this field.

Estimates of total industrial advertising volume are not readily available because of the lack of relevant aggregate data and the vagaries of defining what constitutes "industrial advertising." However, N. W. Ayer estimated that industrial advertising totaled $925 million in 1973;[2] and Marsteller, chairman of one of the major advertising agencies in the industrial marketing field, has indicated that there are 300–500 firms with annual industrial advertising budgets exceeding $1 million.[3] Surveys of industrial advertising budgets show that outlays for research have been running at about 1% of expenditures for several years.[4] Considering that the top 100 national advertisers alone spent $5.68 billion in 1973,[5] one can readily appreciate why the cumulative body of studies bearing on industrial advertising effects appears so slight in comparison to that available on consumer advertising.[6]

The advertising budget for the industrial marketer is typically too small to justify or support the kind of research effort required to assess the impact of advertising in a manner that would yield information relevant to expenditure decisions. This condition contributes to the skepticism of many industrial executives toward the effectiveness of advertising. Thus, advertising expenditure policy continues to be a perplexing problem for industrial marketing managers, and it becomes important to ask what is known about the process and effects of industrial advertising and how that knowledge relates to current budgeting practices.

1. See, for example, Frederick E. Webster, Jr. and Yoram Wind, *Organizational Buying Behavior* (Englewood Cliffs, N.J.: Prentice-Hall, 1972); and James M. Utterback, "Innovation in Industry and the Diffusion of Technology," *Science*, February 14, 1974, pp. 620-626.

2. N. W. Ayer & Sons, Inc., *Industrial Advertising: Past, Present and Future* (Philadelphia, 1974), p. i.

3. William A. Marsteller, "Field of Industrial Advertising Gets More Competitive," *Advertising Age*, June 17, 1974, p. 23.

4. See, for example, Sally Strong, "Ad Budgets '74: Trend Is Still to Spend, Spend, Spend," *Industrial Marketing*, Vol. 59 (February 1974), p. 57.

5. Merle Kingman, "Top National Advertisers Hike Ad Total to $5.68 billion," *Advertising Age*, August 26, 1974, p. 1.

6. Advertising Research Foundation, *Measuring Payout: An Annotated Bibliography on the Dollar Effectiveness of Advertising* (New York, 1973).

Journal of Marketing, Vol. 40 (January 1976), pp. 16–24.

Measure of Response	Research Design: Correlational	Research Design: Experimental
Sales	Occasional	None?
Attitude and Other Nonsales	Most Common	Rare

FIGURE 1. Current state of industrial advertising research.

Industrial Advertising Effects and Costs

At the heart of the problem of budgeting expenditures for advertising is the lack of understanding of the nature of advertising response. This section presents a selective review of published empirical studies that provide information or clues about the effects of industrial advertising. The body of material that meets these criteria is quite small. Release of research undertaken by individual firms is infrequent, with the exception of brief, informal accounts that occasionally appear in the trade press.

Arthur D. Little, Inc. and N. W. Ayer have both recently issued reports surveying the literature in the industrial advertising field.[7] The Arthur D. Little report claimed that 1100 studies were uncovered, but many of the references listed dealt with consumer advertising research. In fact, only 8 studies were singled out for detailed discussion. The impression gleaned from those reviews, as well as from the present one, is that, from a methodological viewpoint, the current state of industrial advertising research can be described as indicated in Figure 1.

While only a very limited amount of empirical research is available in this area, some evidence exists that bears on each of the following important phenomena:

1. *Economies of scale.* Is there some relevant range in which additional increments of advertising yield increasing returns?
2. *Threshold effects.* Is there some minimum level of exposure that must be exceeded for advertising to have a discernible effect?
3. *Interaction effects.* Does advertising interact with other elements of the marketing mix (personal selling in particular) to produce effects that are greater than the sum of their separate effects?

This section will examine the current literature in industrial advertising with respect to the effects and costs of such advertising. Particular attention will be paid to the sales and nonsales effects and to specific cost considerations, in an attempt to answer the three questions posed above.

Sales Effects

The published literature is almost devoid of either correlational or experimental investigations of sales response to industrial advertising. A noteworthy exception is a regression analysis discussed by Weinberg.[8]

Weinberg reported empirical evidence on the marketing effort–sales relationship which implied diminishing returns for that effort. He developed a multiple-equation corporate planning model that was applied to several industrial goods manufacturers. Weinberg reported that a submodel of the system relating changes in a firm's market share to its "advertising exchange rate" (the firm's advertising expenditures per dollar of sales divided by the corresponding ratio for its competitors) had been successfully used in some of this work. He presented an example in which data consisting of seven observations for an unidentified glass container manufacturer were used to estimate the relationship between annual changes in market share and the exchange rate for advertising expenditures. An excellent fit was obtained ($R^2 = .966$), and the form of the relationship (linear in the logarithms of both variables) implied diminishing returns to ad-

7. Arthur D. Little, Inc., *An Evaluation of 1100 Research Studies on the Effectiveness of Industrial Advertising*, A report to American Business Press, Inc. (Cambridge, Mass., 1971); and same reference as footnote 2.

8. Robert S. Weinberg, "Multiple Factor Break-Even Analysis: The Application of O.R. Techniques to a Basic Problem of Management Planning and Control," *Operations Research*, Vol. 4 (April 1956), pp. 152-186.

· *ABOUT THE AUTHORS.*

Gary L. Lilien is assistant professor of management science, Alvin J. Silk is professor of management science, and Jean-Marie Choffray and Murlidhar Rao are doctoral students in the Alfred P. Sloan School of Management, Massachusetts Institute of Technology.

vertising effort. Weinberg also demonstrated how the model could be incorporated into a procedure to determine the company's relative advertising effectiveness per dollar expended and, more importantly, to find the advertising level that would maximize profit in the next year given a forecast of competitive activity and economic conditions.[9]

What is perhaps most interesting about the Weinberg study is that it remains a rarity. It showed how quantitative advertising-sales relationships could be *developed* and *used* to help set advertising budgets. Yet there are no reports in the literature of follow-up work.

There are, however, two other areas of sales effects of advertising that have received some attention in the literature: the effect of advertising on competition and advertising's effect on sales call effectiveness. Each of these is examined below.

Effect of Advertising on Competition. The effect of advertising on competition has long been a subject of considerable interest to economists concerned with industrial organization and economic performance. The debate has centered on whether or not heavy advertising helps raise entry barriers and thereby leads to diminished levels of competition and the earning of monopoly profits. Schmalensee has reviewed a number of "direct tests" of the proposition that advertising adversely affects competition, but interpretation of the available evidence on this question remains controversial for a variety of reasons discussed by him and others.[10] One of these studies, however, deserves mention here because it treated producer and consumer goods separately.

Miller reports a positive correlation between advertising intensity and industry profit rates. He examined the relation of profit rates to advertising intensity (advertising-sales ratios) plus two other variables: concentration (share of industry output produced by the largest firms) and diversity (the extent to which firms specialize in one industry or are diversified into other industries).[11] Multiple linear regressions of profit rates on these three variables were reported for a sample consisting of 71 "Internal Revenue Service minor industries" (roughly the three-digit standard industrial classification level of aggregation) that were manufacturers of producer goods. The regression coefficient for the advertising intensity variable was positive and statistically significant, which implies that those producer goods industries that spent more on advertising tended to be those that realized higher rates of profitability. An unresolved issue here is whether profits determined advertising rather than vice versa.

Effect on Sales Call Effectiveness. Morrill reports results that seem to indicate that advertising increases sales call effectiveness. He has carried out a large body of relevant industrial advertising research sponsored by a dozen major industrial sellers.[12] Some reports have appeared that summarize his results from studies involving 129 brands of 23 products drawn from five industries (utilities, commodities, electrical/electronic, metalworking, and chemical).[13] Over 40,000 telephone interviews at 17,000 buying locations were conducted during the period 1964 to 1969. In each case, an attempt was made to locate one or more "brand-deciders" and to assess purchase behavior, attitudes toward various brands, and magazine reading habits from which advertising exposure could be inferred. Analysis of these data revealed a strong positive association between amount of advertising exposure and various measures of attitudinal and sales response. Figure 2 illustrates some of these relationships using average data for the five industrial classifications.

Morrill also found that dollar sales per salesman's call were much higher for calls made on customers who had been exposed to advertising, as compared to those who had not. Based on estimates of the average costs of an industrial salesman's call ($50.00) and an advertising exposure ($0.16), a subsidiary analysis showed that for the average brand studied, an index of personal selling expense as a percentage of sales declined from a level of 100 with no advertising exposures to a value of 74 for 30 exposures.[14]

Taken at face value, Morrill's results make a strong case for industrial advertising, indicating that advertising pays off by making personal selling efforts more productive. However, certain methodological questions surrounding Morrill's

9. Robert S. Weinberg, *An Analytical Approach to Advertising Expenditure Strategy* (New York: Association of National Advertisers, 1960).

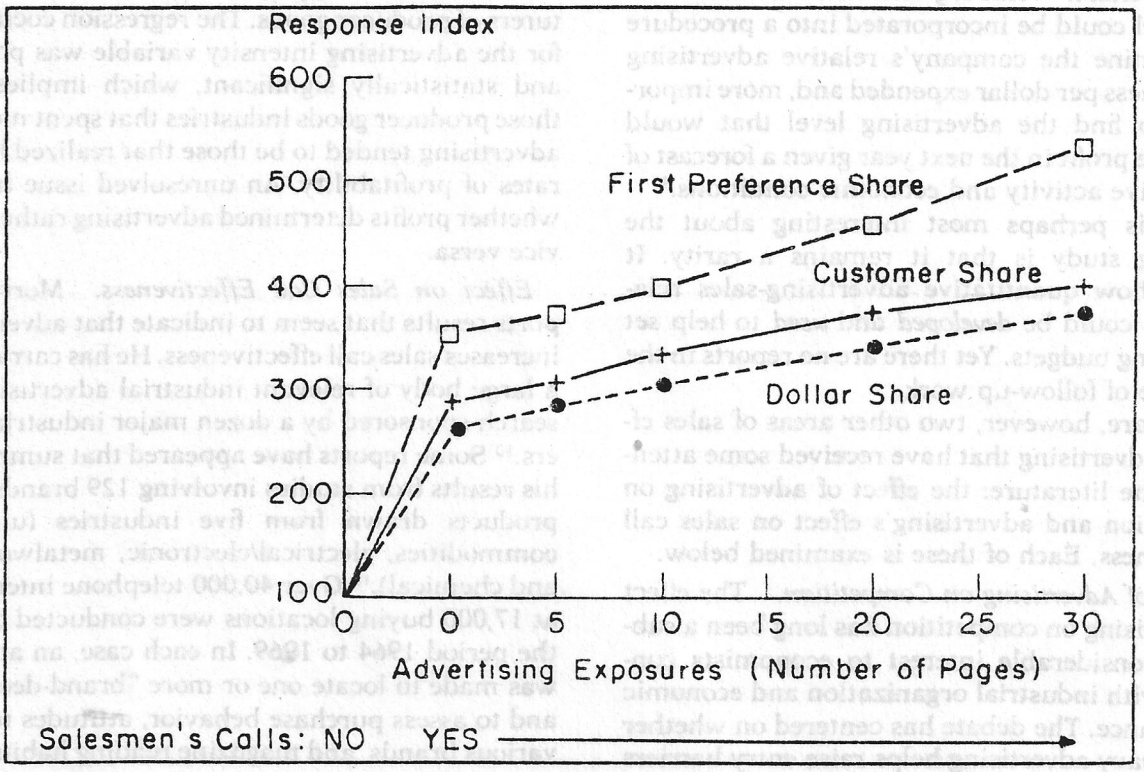
10. Richard Schmalensee, *The Economics of Advertising* (Amsterdam, Netherlands: North-Holland, 1972), pp. 219-228 and Chap. 7; see also, Julian L. Simon, *Issues in the Economics of Advertising* (Urbana, Ill.: University of Illinois Press, 1970), Chap. 9.

11. Richard A. Miller, "Market Structure and Industrial Performance: Relation of Profit Rates to Concentration, Advertising Intensity, and Diversity," *Journal of Industrial Economics*, Vol. 28 (April 1969), pp. 104-118.

12. John E. Morrill, "Industrial Advertising Pays Off," *Harvard Business Review*, Vol. 48 (March-April 1970), pp. 4-14.

13. McGraw-Hill Book Co., "How Advertising Works in Today's Marketplace" (New York, January 1971); and McGraw Hill Book Co., "Advertising's Challenge to Management: A Second Report on the Morrill Study" (New York, September 1971).

14. McGraw-Hill, "Advertising's Challenge," same reference as footnote 13, p. 6.



Source: Plotted from data pesented in "Advertising's Challenge to Management: A Second Report on the Morrill Study" (New York: McGraw-Hill Book Co., September 1971), p. 8.

FIGURE 2. Levels of response associated with varying amounts of exposure to advertising and salesmen's calls.

studies deserve mention. Morrill's inferences about the effectiveness of advertising are derived from *ex post facto* comparisons of exposed and unexposed groups. It is well known that this "preexperimental" design is prone to several threats to internal and external validity.[15] Morrill refers to a computer-based method for "matching" the exposed and unexposed groups.[16] Since Morrill's conclusions about advertising's impact depend on the equivalence of such groups (exclusive of advertising exposure), the adequacy of this matching procedure is critical and it is unfortunate that details of the method have not been published. Further, the practice of obtaining response data and self-reports of exposure in the same interview can lead to spuriously high associations between these two types of measures.[17]

Nonetheless, the sheer bulk and consistency of the evidence from Morrill's studies is impressive, and by no means can it be overlooked. The most important finding is that advertising used in conjunction with personal selling can reduce total selling costs. Morrill also refers to evidence of threshold effects in response to advertising. He suggests that less than a certain (small) level of exposure (a frequency of about five advertising pages per year) seems to have no effect.[18]

Attitudinal and Nonsales Measures of Response

Research that focuses on attitudinal and other nonsales measures of response to industrial advertising is, as noted earlier, by far the most common type undertaken. Proprietary studies of this kind are done routinely, and occasionally partial accounts of them are made public.[19] Although these studies are seldom reported in sufficient detail to permit analysis and to provide a basis for generalization, there are some notable exceptions.

Morrill's comprehensive studies provide support for the widely held view that a principal function of industrial advertising is to make buyers more receptive to the advertiser's salesmen by creating a favorable impression of the

15. Donald T. Campbell and Julian C. Stanley, *Experimental and Quasi-Experimental Designs for Research* (Chicago: Rand-McNally, 1963), pp. 12-14.
16. Same reference as footnote 12, p. 6.
17. Same reference as footnote 15, p. 67.
18. Same reference as footnote 12, p. 14.
19. See, for example, James W. Mason, "The Communication Effect of an Industrial Advertising Campaign," *Journal of Advertising Research*, Vol. 9 (March 1969), pp. 35-37; and Harry D. Wolfe, James K. Brown, and G. Clark Thompson, *Measuring Advertising Results* (New York: National Industrial Conference Board, 1962).

firm as a supplier.[20] This concept constitutes one of the major rationales for the image-building campaigns frequently undertaken by industrial marketers.[21]

Levitt conducted a controlled laboratory experiment that demonstrated the positive influence of company reputation on the effectiveness of industrial salesmen.[22] Experienced business personnel (113 practicing purchasing agents and 130 engineers and scientists) were used as subjects. Participants were exposed to a ten-minute filmed sales presentation for a fictitious, but plausible, new product. Company reputation was manipulated by varying the name of the firm that the salesman was identified as representing. Immediately after viewing the film, and again five weeks later, subjects responded to a questionnaire that asked if they would recommend that the product be given further consideration by others in their organization and whether they themselves would favor adoption. As anticipated, company reputation was found to influence the favorableness of response on these measures. However, some unexpected differences were detected between the reactions of the purchasing agents and the reactions of the technical personnel. The results suggested that a seller's reputation made a difference in a salesman getting a favorable first hearing for a new product with *both* purchasing and technical personnel. But when it came to making an actual purchasing decision, the advantage of reputation manifested itself with the technical personnel but not with the purchasing agents.

There has been some research on industrial buyers' use of, or preferences for, different information sources in connection with studies of the adoption of new products.[23] The results suggest a pattern of diminishing reliance on impersonal sources such as media advertising and increasing influence of salesmen and other personal sources as buyers move from the initial awareness stage through the evaluation and decision stages of the adoption process. In this regard, Turnbull, in a study of marketing communication policies of ferrous components producers in the United Kingdom, reports "a failure of the companies to understand that buyers may have different communication needs and channel preferences at different stages in the buying process, and in different industries."[24]

Advertising Cost Studies

The preceding discussion focused on how industrial buyers and markets respond to advertising. This section examines research related to the other key element that enters into advertising expenditure discussions: cost considerations.

The issue of whether or not there are economies of scale in advertising is highly relevant not only to determining advertising expenditure levels, but also to allocating these funds among media and markets and over time. The occurrence of economies of scale in advertising implies that over some range of advertising, an additional unit of advertising input produces a greater marginal return than the previous equal increment yielded.

Schmalensee distinguishes between two sources of varying returns to scale in advertising.[25] The first he terms "technical economies," to refer to differences in the effectiveness of successive exposures. The data from Morrill's studies, plotted in Figure 2, would seem to indicate essentially constant returns to scale and hence reflect the absence of any technical economies. The second variety are "pecuniary economies," which may arise if the cost of advertising exposures changes with the total number of exposures used, such as might occur as a consequence of the media offering quantity discounts.

Economies of scale in advertising are treated to some extent in the economics literature. Increasing returns to scale constitute one mechanism whereby advertising might help raise barriers to entry. The available empirical studies tend to be based on cross-sectional samples consisting either entirely of consumer goods industries or of a combination of consumer and producer goods fields. Only occasionally has the latter distinction been recognized in the analyses reported. Most of these studies are consistent in failing to support the notion of economies of scale in advertising.[26]

---

20. Wolfe et al., same reference as footnote 19, p. 7.

21. See, for example, Wolfe et al., same reference as footnote 19, pp. 40-101.

22. Theodore Levitt, *Industrial Purchasing Behavior: A Study of Communications Effects* (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1965).

23. See, for example, Frederick E. Webster, Jr., "Informal Communication in Industrial Markets," *Journal of Marketing Research*, Vol. 7 (May 1970), pp. 186-189; John A. Martilla, "Word-of-Mouth Communication in the Industrial Adoption Process," *Journal of Marketing Research*, Vol. 8 (May 1971), pp. 173-178; and Urban B. Ozanne and Gilbert A. Churchill, Jr., "Five Dimensions of the Industrial Adoption Process," *Journal of Marketing Research*, Vol. 8 (August 1971), pp. 322-328.

24. P. W. Turnbull, "The Allocation of Resources to Marketing Communications in Industrial Markets," *Industrial Marketing Management*, Vol. 3 (October 1974), pp. 297-310.

25. Schmalensee, same reference as footnote 10, pp. 231-232.

26. George J. Stigler, "The Economies of Scale," *Journal of Law and Economics*, Vol. 1 (October 1958), p. 66; and Julian L. Simon and George H. Crain, "The Advertising

However, some contrary findings have turned up in cross-sectional studies of marketing costs of individual firms.

Turnbull obtained information on marketing communications expenditures and sales for a set of firms producing ferrous components whose combined output accounted for 51% of the industry total in the United Kingdom.[27] He found a rank order correlation of −.512 between firm size (sales) and the ratio of marketing communications expenditures to sales. Although based on only eleven observations, the coefficient approaches significance at the .05 level.

Bailey found evidence of economies of scale in a 1969 study of manufacturers' marketing costs that was conducted by the Conference Board. This study involved data obtained for 828 products, a large proportion of which were industrial goods.[28] Although detailed results were not presented, Bailey states that "the large-volume marketing unit dealing either in consumer or industrial goods generally gives up less of its sales dollar to the cause of marketing than does a small-volume competitor." He goes on to observe that "there is a certain point at which differences in sales volume become critical" and indicates that for industrial products this point is "just below $30 million."[29]

It was noted earlier that Morrill demonstrated a strong interaction effect between personal selling and advertising. Evidence of this phenomenon was also found in a study of industrial firms' marketing costs carried out by McGraw-Hill and reported by Kolliner.[30]

Kolliner reports that the larger the role of advertising in the marketing budget, the lower that budget seems to be as a percentage of sales. In 1961, marketing cost data were obtained via a mail questionnaire from 893 industrial advertisers. The sample contained firms of various sizes from three broad industrial product categories (machinery, materials, and equipment and supplies). Consistent with the view that advertising can increase the efficiency of personal selling, it was found that as the proportion of total sales expense spent on advertising and promotion increased, total sales expense as a percentage of sales tended to decline.

Interpreting this relationship is somewhat hazardous, inasmuch as it was formed by grouping and averaging the original observations on two variables which were ratios whose numerators and denominators contain common elements. It is unfortunate that more disaggregated analyses were not undertaken. Yet some additional results were reported which tend to confirm the basic notion that advertising contributes to marketing efficiency. The relationship between firm size (annual sales volume) and total sales expense as a percentage of sales was examined separately for firms that had expended "high" (more than 20%) and "low" (less than 20%) proportions of total sales expense on advertising and promotion. Figure 3 shows these relationships, which are also based on averages of grouped data.

For all four size categories, total sales expense (as a percentage of sales) was less with "high" advertising and promotion than with "low." Note that the results indicate economies of scale. The same pattern of results was observed in data from a second, smaller study of 227 firms conducted by McGraw-Hill in 1963.[31] Thus, the results from these cost studies appear to be consistent with the research on advertising response reviewed above in indicating that industrial advertising can serve to enhance the effectiveness of personal selling efforts.

Budgeting Practices

In light of the dearth of available empirical knowledge about market response to industrial advertising, management in this field must ordinarily depend on some blend of judgment, experience with analogous situations, and simple rules-of-thumb guidance in setting budgets. Heuristics like "X percent of expected sales" and the "objective and task" method are the principal approaches to budgeting that industrial advertisers report using.

Among 557 subscribers to *Industrial Marketing* who responded to a 1968 mail questionnaire, the following distribution of budgeting practices was found:[32]

Method	% Using
% of sales	24.8
Task	35.6
Arbitrary	27.7
Other	11.9
	100.0

Ratio and Economies of Scale," *Journal of Advertising Research*, Vol. 6 (September 1966), pp. 37-43. For a review, see Schmalensee, same reference as footnote 10, pp. 228-237; and Simon, same reference as footnote 10, Chap. 1.

27. Same reference as footnote 24.

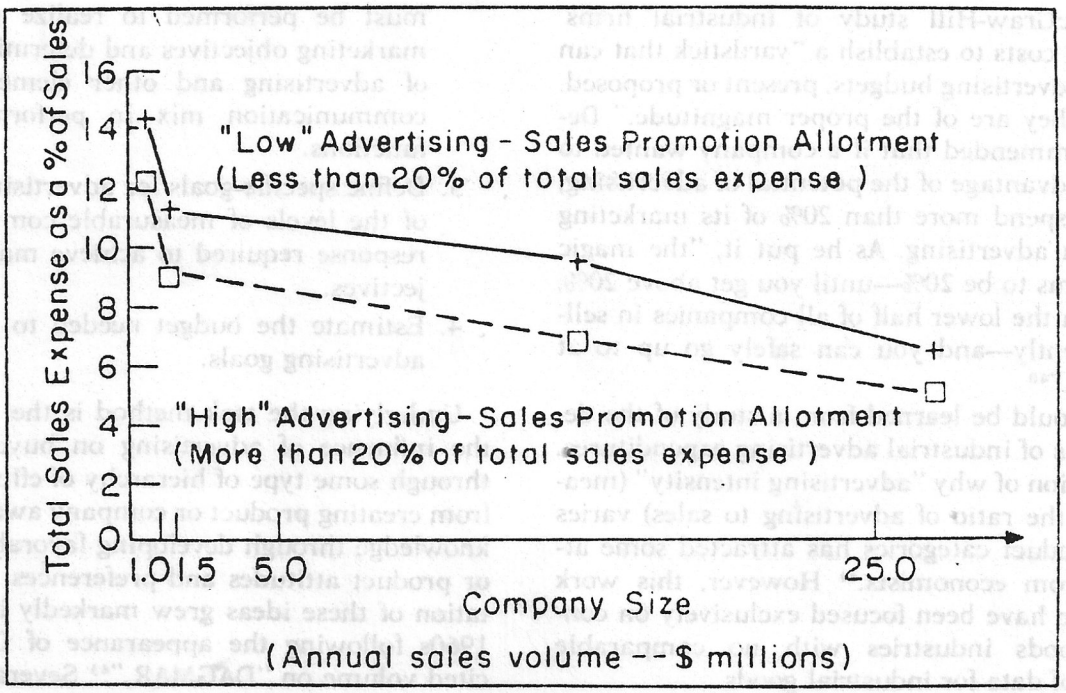
28. Earl L. Bailey, "Manufacturers' Marketing Costs," *Conference Board Record*, Vol. 8 (October 1971), pp. 58-64.

29. Same reference as footnote 28, p. 60.

30. Sim A. Kolliner, Jr., "New Evidence of Ad Values," *Industrial Marketing*, Vol. 48 (August 1963), pp. 81-84. See also, McGraw-Hill Laboratory of Advertising Performance, "Advertising and the Cost of Selling" (New York: McGraw-Hill Book Co., July 1964).

31. McGraw-Hill, same reference as footnote 30.

32. Murray Harding, "Project Future: More Advertisers Mad than Glad about Budget Policy," *Industrial Marketing*, Vol. 53 (August 1968), p. 58.



Source: Plotted from data presented in Sim A. Kolliner, "New Evidence of Ad Values," *Industrial Marketing*, Vol. 48 (August 1963), p. 82.

FIGURE 3. Relative selling costs and company size for high and low advertising-sales promotion allotments.

Heavy reliance on rules of thumb and the task method has also been reported in other budgeting studies on firms outside the industrial marketing sector.[33] In recent years, however, measurement programs and models have made some inroads on budgeting practices in the consumer goods field;[34] it is, therefore, surprising to find that Weinberg's work is the only documented account of a comparable analytical method for budgeting industrial advertising that has appeared in the literature.[35]

Heuristics

Percent-of-sales decision rules are a pervasive influence in setting advertising budgets. Schmalensee has analyzed the conditions under which it might be optimal for a monopolist or an oligopolist to maintain a constant advertising-to-sales ratio.[36] However, there have been no empirical investigations to demonstrate that the behavior of industrial advertisers' expenditures indeed are sensitive to key limiting requirements (e.g., the constancy of certain demand elasticities) of such a policy.

The weaknesses of percent-of-sales decision rules are well known,[37] but the most fundamental objection is that they implicitly make advertising a consequence rather than a determinant of sales and profits and can easily give rise to dysfunctional policies. For example, budgeting advertising as a percentage of expected sales would ordinarily lead to reduced expenditures in an economic downturn. Yet the Buchen organization, in a correlational study, indicated that industrial advertisers who maintained their expenditures during recession periods realized better sales performance than those who did not.[38] Nonetheless, some mechanism to control advertising expenditures is required, and in the absence of concrete and current measurements of advertising results, top management frequently establishes some percentage of sales or profit as a budgeting guideline.[39]

DeWolf used the results from the aforemen-

33. See, for example, David L. Hurwood, "How Companies Set Advertising Budgets," *Conference Board Record*, Vol. 5 (March 1968), pp. 34-41; Albert W. Frey, *How Many Dollars for Advertising* (New York: Ronald Press, 1955); and Walter Taplin, "Advertising Appropriation Policy," *Economica*, Vol. 26 (August 1959), pp. 227-239.

34. Seymour Banks, "Trends Affecting the Implementation of Advertising and Promotion," JOURNAL OF MARKETING, Vol. 37 (January 1973), p. 24.

35. Same reference as footnote 8.

36. Same reference as footnote 10, Chap. 2.

37. See, for example, Philip Kotler, *Marketing Management*, 2nd ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1972), pp. 669-670.

38. Buchen Advertising, Inc., *Advertising in Recession Periods: 1949, 1954, 1958, 1961—A New Yardstick Revisited* (Chicago, 1970).

39. See, for example, George A. Perce, "How Kendall Prepares Its Advertising Budget," in *The Advertising Budget*, Richard J. Kelly, ed. (New York: Association of National Advertisers, 1968), pp. 52-54.

tioned McGraw-Hill study of industrial firms' marketing costs to establish a "yardstick that can apply to advertising budgets, present or proposed, to see if they are of the proper magnitude." DeWolf recommended that if a company wanted to take full advantage of the potential of advertising, it should spend more than 20% of its marketing budget on advertising. As he put it, "the magic figure seems to be 20%—until you get above 20%, you are in the lower half of all companies in selling efficiently—and you can safely go up to at least 33%."[40]

Much could be learned from a study of the determinants of industrial advertising expenditures. The question of why "advertising intensity" (measured by the ratio of advertising to sales) varies across product categories has attracted some attention from economists.[41] However, this work appears to have been focused exclusively on consumer goods industries with no comparable analyses of data for industrial goods.

Other heuristics, such as "matching" competitive expenditures, also frequently enter into budgeting decisions. All of these methods share some common characteristics in that they serve as a management control device but are difficult to justify. Reliance on simple rules of thumb by industrial marketers appears to have declined over time. A 1939 survey of industrial advertising budgeting practices reported by Borden showed greater use of such methods than was indicated by the 1968 *Industrial Marketing* study mentioned above.[42]

Task Method

The task method focuses on communication rather than on sales effects of advertising. A budget is developed by summing estimates of the costs of activities and programs required to accomplish the particular functions assigned to advertising. The essential steps involved in applying the method are:

1. Establish specific marketing objectives for the product in terms of factors such as sales volume, market share, and profit contribution, as well as target market segments.
2. Assess the communication functions that must be performed to realize the overall marketing objectives and determine the role of advertising and other elements of the communication mix in performing these functions.
3. Define specific goals for advertising in terms of the levels of measurable communication response required to achieve marketing objectives.
4. Estimate the budget needed to accomplish advertising goals.

Underlying the task method is the notion that the influence of advertising on buyers appears through some type of hierarchy of effects ranging from creating product or company awareness and knowledge through developing favorable supplier or product attitudes and preferences. Implementation of these ideas grew markedly in the early 1960s following the appearance of Colley's oft-cited volume on "DAGMAR."[43] Several examples of applications of this version of the task method and the accompanying use of intermediate measures of communication effectiveness in industrial advertising have been discussed in the literature.[44] *Industrial Marketing*'s 1968 survey found that users of the task method were more likely to be satisfied with their budgeting practices than respondents who relied on other approaches.[45]

The practical difficulty of isolating advertising's impact on sales, plus recognition that advertising's function is to communicate, have motivated adoption of the task method and accompanying measures of intermediate response. The latter provide a basis for some modicum of management control over advertising operations. The great stumbling block in using this approach as a planning tool, however, is that it requires knowledge about how levels of expenditures and various communication response measures are related, and how the latter are linked to the purchase behavior that is relevant to the attainment of marketing goals.[46] The existence and nature of

40. John W. DeWolf, "A New Tool for Setting and Selling Advertising Budgets" (Paper presented at the Eastern Regional Meeting of the American Association of Advertising Agencies, November 7, 1963), p. 21.

41. Lester G. Telser, "Some Aspects of the Economics of Advertising," *Journal of Business*, Vol. 41 (April 1968), pp. 166-173; and, for a review, see Schmalensee, same reference as footnote 10, pp. 18-20.

42. Neil H. Borden, *The Economic Effects of Advertising* (Chicago: Richard D. Irwin, 1942), p. 722.

43. Russell H. Colley, *Defining Advertising Goals for Measured Advertising Results* (New York: Association of National Advertisers, 1961).

44. William P. Raines, "Setting Advertising Goals for Industrial Products," in *The Advertising Budget*, Richard J. Kelly, ed. (New York: Association of National Advertisers, 1968), pp. 47-51; Patrick J. Robinson and David J. Luck, *Promotional Decision Making* (New York: McGraw-Hill Book Co., 1964), pp. 168-177; Saul S. Sands, *Setting Advertising Objectives* (New York: National Industrial Conference Board, 1966); and Wolfe et al., same reference as footnote 19.

45. Same reference as footnote 32, p. 68.

46. See, for example, the papers on "Advertising Research—DAGMAR Revisited," in *New Directions in Mar-*

such relationships are highly controversial matters.[47] Progress is being made in understanding and using these relationships for purposes of planning and controlling marketing communications, but these developments appear to have occurred largely in the consumer field.[48]

Conclusions

A review of the existing literature offers some insight into the existence of economies of scale, threshold effects, and interaction effects in the field of industrial advertising. It also points up the need for additional research in this area.

Evidence exists that supports the notion of economies of scale in industrial advertising, that is, that in some region of advertising expenditure, additional increments of advertising yield increasing returns. However, evidence has also been found that is not supportive of this hypothesis. Definitive information about the existence and location of this region would be of great help to budgeters in determining the level of advertising expenditures.

The existence of threshold effects, a minimum level of exposure needed for advertising to have a measurable effect, is supported by the literature. A manager should not expect to see advertising effects until the level of expenditure is sufficiently high. But *where* that threshold is found has not been established.

Finally, despite methodological problems in many of the studies, the volume of evidence suggests that industrial advertising and personal selling perform complementary and synergistic roles. Most managers might expect that a split of the industrial marketing budget between advertising and personal selling categories would be more efficient than a total allocation to a single category. But there is no indication about either what the overall budget *should* be or what split between advertising and personal selling expenditures would be most efficient.

Thus, the study of the effects of industrial advertising has not yet provided guidance to industrial advertisers faced with specific expenditure decisions, and current budgeting practice reflects the lack of knowledge about response. Simple heuristics and the task method are the most common budgeting approaches used. Both methods provide a control mechanism for spending, but they may lead to inappropriate policies.

This review points to the need for a better understanding of how industrial advertising can be effective. A major field study of advertising response would be desirable, but the small size of industrial advertising budgets makes an upsurge of activity in this area appear unlikely. Opportunities do exist, however, for econometric work concerned with developing response functions for individual firms. Another fruitful research direction is to identify and exploit managers' existing knowledge about advertising effectiveness, an approach Bowman and others have shown to be empirically valid in other decision areas.[49] One such study is underway[50] and may help provide a basis for new forms of industrial advertising norms and guidelines.

---

keting, Frederick E. Webster, Jr., ed. (Chicago: American Marketing Assn., June 1965), pp. 333-358.

47. Kristian S. Palda, "The Hypothesis of a Hierarchy of Effects: A Partial Evaluation," *Journal of Marketing Research*, Vol. 3 (February 1966), pp. 13-25; and Michael L. Ray, "Marketing Communications and the Hierarchy of Effects," in *New Models for Communications Research*, Peter Clarke, ed. (Beverly Hills, Calif.: Sage, 1974), pp. 147-176.

48. Michael L. Ray, "A Decision Sequence Analysis of Developments in Marketing Communications," JOURNAL OF MARKETING, Vol. 37 (January 1973), pp. 29-38.

49. E. H. Bowman, "Consistency and Optimality in Managerial Decision Making," *Management Science*, Vol. 9 (January 1963), pp. 310-321; and Howard Kunreuther, "Extensions of Bowman's Theory of Managerial Decision Making," *Management Science*, Vol. 15 (April 1969), pp. B 415-439.

50. For details of the study, see Gary L. Lilien, "How Many Dollars for Industrial Advertising? Project ADVISOR" (Working Paper 735-74, Sloan School of Management, M.I.T., September 1974); and John D. C. Little and Gary L. Lilien, "How Much for Industrial Advertising?" (Talk before the Advertising Research Foundation Conference, New York, November 18, 1974).

This paper was prepared with the support of a research grant made to M.I.T. for Project ADVISOR, a study of industrial marketing communications funded by a group of participating companies and coordinated through the Association of National Advertisers. Thanks are due to Donald Gluck and John D. C. Little for stimulating this work.