

Marketing Information Systems: A New Dimension for Marketing Research

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The application of the systems approach to marketing management promises to breathe new life into marketing research. In this article the authors present their views of the relationship between decision-information flows and the management process in marketing, and state the case for expanding traditional marketing research into "marketing information systems."

BUSINESS enterprise in the United States is caught in an ironic dilemma: our economic system generates a massive volume of data daily, and the rate of information generation appears to be increasing exponentially; yet most managers continue to complain that they have insufficient, inappropriate, or untimely information on which to base operating decisions.

In 1958, Adrian McDonough observed: "Half the cost of running our economy is the cost of information. No other field offers such concentrated room for improvement as does information analysis." Today, a decade later, the need for efficient information management is even greater, perhaps especially for marketing management since its job is to match the firm's products with dynamic markets. Marketing is inextricably caught up in the "Communications Revolution." The new era, "The Age of Information," will emphasize the information gathering and processing structure of the organization.

It is the contention of this article that the problem of securing adequate decision information for marketing must, and now can, be seen from a broader perspective than previously has been the case. In seeking to establish a new outlook on a matter it is often helpful to cast the problem in new terms. The new perspective from which this inquiry will be launched is that of "managerial systems." The process of developing timely, pertinent decision data for marketing management can now be characterized more meaningfully, even if somewhat prematurely, as the functioning of a "marketing information system" rather than simply as "marketing research."

The Role of Marketing Research

Where does research fit into the marketing management process? If the marketing concept—with its emphasis on integrated decision-making—were widely accepted and implemented, the answer would be fairly clear. Research would be used to analyze specified relationships in the various functional areas of marketing, but the emphasis would be on its use in a coordinated, systematic fashion in order to make the total marketing strategy of the firm more efficient. (See Figure 1)

Research findings would serve at the outset as a basis for establishing objectives and formulating an apparently optimal plan. At this stage the role of research essentially would be to predict

Journal of Marketing, Vol. 32 (July, 1968), pp. 19-23.

1 "Today's Office—Room for Improvement," *Dun's Review and Modern Industry*, Vol. 73 (September, 1958), p. 50.

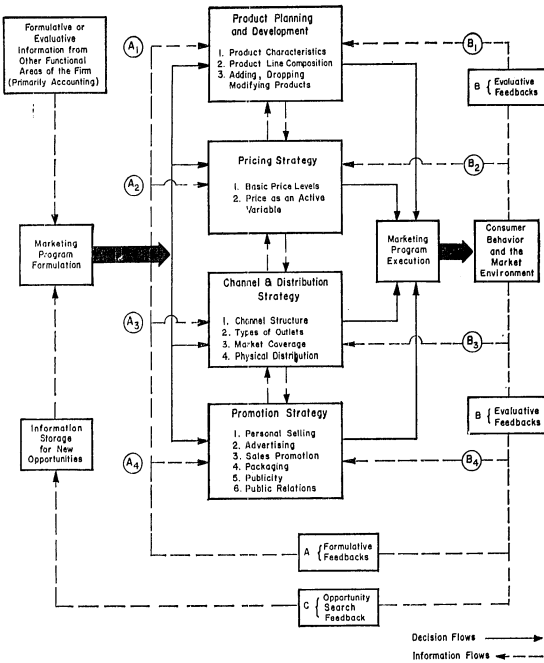


FIGURE 1. The Marketing Management Process and Information Flow.

the results of alternative business decisions (for example, a "penetration" price versus a "skimming" price, or information dissemination through salesmen rather than through advertising). (See the "A" feedbacks in Figure 1)

If the research effort were extended full cycle, periodic post hoc studies would be conducted to evaluate the execution of specific aspects or phases of the marketing program. ("B" feedbacks in Figure 1) In this role, research would provide the basis for control, modification, or redirection of the overall program.

Control and modification (or redirection), in sum, represent *reformulation*, and the "B" feedbacks (evaluative) in fact would become "A" feedbacks (formulative), for the succeeding stage of the marketing program. This condition simply underscores the fact that marketing management is an ongoing

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process, or—in the newer terminology—a dynamic system.

Formulative and evaluative information can also come from *inside the firm*, notably from the accounting department. This information flow typically is not considered part of "marketing research." It is definitely an integral part, however, of a marketing information system.

Under the marketing concept, research should also help to anticipate new profit opportunities for the firm in the form of new products or services. ("C" feedback in Figure 1) In many U. S. industries—especially consumer goods industries—the rate of product innovation, the rate of new product failure, and the cost of new product failure are all extremely high and still rising. To survive in such dynamic markets the firm must try to develop a sensitivity to changes in consumer behavior and in the conditions that influence behavior, both of which create opportunities for successful new products.

It is meaningless to talk of a new product without considering at the same time the related marketing decisions (the rest of that product's marketing mix) that will have to be made. This consideration would bring the cycle back to the formulative role of research (the "A" feedbacks), suggesting again that marketing research really *should be a coordinating agent*. Each marketing decision should be thought of as an input in the dynamic system, and research should be used as an agent to assist in phasing the inputs. The common goal of the decision inputs is the profitable satisfaction of consumer needs or wants; this brings the matter back to the marketing concept, and the package seems reasonably complete. In fact, if marketing research and the marketing concept had this kind of relationship in widespread practice, the case for marketing information systems would be considerably weakened.

Research by Fits and Starts

A recent survey revealed that unfortunately there is still considerable confusion and wide divergence of opinion regarding the definition and managerial implications of the marketing concept.² Especially disappointing was the failure of many companies to cite customer-orientation and integrated decision-making as important aspects of the concept. One of the consequences of this narrow view has been the evolution of marketing research somewhat "by fits and starts."

A widely used definition of marketing research is "the systematic gathering, recording, and analyzing of data about problems relating to the marketing of goods and services."³ Unfortunately, the research procedure has tended to be unsystematic, to emphasize data collection *per se* instead of the develop-

ment of decision-pertinent information, and to concern itself with isolated problems almost on an ad hoc basis. "There is a widespread failure to visualize marketing research as a continuing process of inquiry in which executives are helped to think more effectively."⁴

Toward Marketing Information Systems

The systems approach to marketing management is breathing new life into marketing research. The emphasis that systems theory places on interaction and integration in the decision-making process makes it clear that the particularistic, "brush-fire" approach that has characterized traditional marketing research is rapidly becoming obsolete. What is needed is "a *marketing intelligence* system tailored to the needs of each marketer. Such a system would serve as the ever-alert nerve center of the marketing operation."⁵

The "nerve center" concept is the theme used by Philip Kotler who has drafted a blueprint for a new organizational unit within the firm, the Marketing Information and Analysis Center (MIAC).⁶ MIAC represents a complete overhaul and expansion of the marketing research department into a comprehensive executive marketing information service.

Definition of MIS

Despite minor variations in terminology, it is clear that many of the critics of the narrow view of the role of marketing research are advocating a common concept—"the concept of careful search to generate a flow of ideas and information which will help executives make better decisions."⁷

The notion of a sustained flow of decision-information leads to the term, "marketing information system," defined as follows:

A structured, interacting complex of persons, machines and procedures designed to generate an orderly flow of pertinent information collected from both intra- and extra-firm sources, for use as the bases for decision-making in specified responsibility areas of marketing management.

It will be helpful to take a closer look at the essential components of the definition: first, a *structured, interacting complex*. The important notion

³ Committee on Definitions of the American Marketing Association, Ralph S. Alexander, Chairman, *Marketing Definitions: A Glossary of Marketing Terms* (Chicago: American Marketing Association, 1962), p. 16-17.

⁴ Joseph W. Newman, "Put Research Into Marketing Decisions," *Harvard Business Review*, Vol. 40 (March-April, 1962), p. 106.

⁵ Lee Adler, "Systems Approach to Marketing," *Harvard Business Review*, Vol. 45 (May-June, 1967), p. 110.

⁶ Philip Kotler, "A Design for the Firm's Marketing Nerve Center," *Business Horizons*, Vol. 9 (Fall, 1966), p. 70.

⁷ Same reference as footnote 4, p. 106.

² Martin L. Bell, *Marketing: Concepts and Strategy* (Boston: Houghton Mifflin Company, 1966), p. 10.

here is that the marketing information system is a carefully developed master plan for information flow, with explicit objectives and a home in the formal organization. Successful information systems will not evolve spontaneously within the organization, nor will they result if their creation is left exclusively to information technicians. Donald Cox and Robert Good point out that a characteristic common to each of the companies that so far has had success with its marketing information system is the *support of top management*.⁸

A marketing information system is a structured, interacting complex of *persons, machines, and procedures*, requiring the coordinated efforts of many departments and individuals, including:

- Top management
- Marketing management, brand management
- Sales management
- New product groups
- Market research personnel
- Control and finance departments
- Systems analysts and designers
- Operations researchers, statisticians, and model builders
- Programmers
- Computer equipment experts and suppliers.⁹

It is clear that in traditional management terms both line and staff personnel inevitably will be involved in any marketing information system. Decision-makers will have to be a great deal more precise in specifying their information needs, and a complete crew of information specialists will be called upon to satisfy them.

What is not clear is the determination of the most effective organization pattern for implementing and administering the system. In fact, the organization problem is probably the greatest deterrent to the more rapid and widespread diffusion of the information systems concept. The question, like many others in the area of organization structure, is not generically answerable; each firm's system will have to be tailor-made.

One of the major factors that makes it meaningful to talk of information systems is the tremendous improvement since World War II in information handling *technology and machinery*. The building of the first primitive computer, only slightly more than two decades ago, has been designated the beginning of a revolution in the information sciences.

There has been some confusion, however, about the relationship between computers and information systems. They are not synonymous; nor is either the sine qua non of the other. The system is the structure and procedure of the entire organization's communicative process; the computer is a processing device

that may or may not be included in the information system.

The consideration of the use of computers has, however, forced many organizations to pay explicit attention to their information systems. "The flexibility and power of the new tool, as well as its great cost, has caused many managers to think for the first time of formally planning their information flows and processing functions."¹⁰

Business information systems include many machines other than the computer and some of them promise to have an impact on future systems that will rival the computer's influence. In particular, data copying, storage, and retrieval machines have greatly expanded management's information processing capability.

It is estimated that in 1966 some half a million duplicating machines spewed out 400 billion copies.¹¹ At the same time, a new document storage system was developed permitting the storage of up to 500,000 single-page documents on a single 7,200 foot reel of videotape. This means that roughly 20,000 articles or chapters from books could be stored on one reel with a retrieval time measured in seconds.

But the physical capacity to generate and process fantastic volumes of data at very high speed is an asset only if the types of data to be gathered and the sources from which they are to be elicited are carefully prescribed. The definition of a marketing information system alleged that it is *designed to generate an orderly flow of pertinent information, collected from both intra- and extra-firm sources*.

Computer-based Reporting Systems

Internal information includes fundamental records of costs, shipments, and sales and any analyses of these that can be made to measure the firm's performance (distribution cost analysis, market shares by product and region, and the like). The computer and more progressive accounting departments that see their role as the provision of management information rather than as simply "score-keeping" have been two of the most important contributors to the integration of such data, on a regular basis, into the marketing information flow.

Many companies are experimenting with "computerized marketing information" in an attempt to shorten the delay between the performance of their products in the market and the receipt of performance reports. In doing so, they stand to sharpen their strategy by gaining valuable lead-time over their competitors.

One producer and nation-wide marketer of con-

¹⁰ Frederick G. Withington, *The Use of Computers in Business Organizations* (Reading, Mass.: Addison-Wesley, 1966), p. 3.

¹¹ E. B. Weiss, "The Communications Revolution and How It Will Affect All Business and All Marketing," a special issue reprinted from *Advertising Age* (Chicago: Advertising Publications, Inc., 1966), p. 22.

⁸ Donald F. Cox and Robert E. Good, "How to Build a Marketing Information System," *Harvard Business Review*, No. 3, Vol. 45 (May-June, 1967), p. 149.

⁹ Sario reference as footnote 8.

sumer goods gets monthly reports on 3,000 key accounts 20 days earlier than before, thanks to computer-based reporting systems. Each account is compared with its performance at the same point in time during the previous year and with the company's current total volume in the particular market zone. Also provided are gross daily tabulations for each package size of each brand by geographic district.

When the doors open each morning at another company, a major grocery products manufacturer, marketing management has a complete sales analysis and inventory position as of closing time the previous day. The data are fed by teletypewriter from the company's sales offices and warehouses to a central computer which analyzes the day's orders. In addition, each salesman is required to "mark sense" his daily call reports and send them in to headquarters each evening for computer analysis. Once accumulated, these reports on the in-store impact of frontings, shelf positions, and point-of-sale materials provide marketing management with an up-to-date retail product-movement picture.¹²

Integrating Research into the MIS

The most important notion in these examples is that a timely, basic data flow has been established to chart the firm's progress and raise warning signals when there is a marketing malfunction. Such a framework will make additional data needs much clearer, allowing special supplementary information to be collected, *as needed*, from external sources through surveys, panels or experiments. At this point, then, the proper order will have been established: *the need for conducting "marketing research" and the technique to be used will be determined in the context of specific managerial information requirements.*

Such an approach will help assure that any data gathered are *pertinent*, another important aspect of the definition of a marketing information system. It is perhaps a more grievous sin to collect unnecessary or redundant information than it is to fail to collect any data at all about a particular matter. Superfluous information costs money to develop and wastes decision-makers' time; it represents a serious misallocation of managerial resources. It must be remembered, the definition asserts, that the data generated are to be used as *the bases for decision-making in specified responsibility areas of marketing management.*

Thus, the questions of the types of data the information system is to generate and the sources from which it is to elicit the data really can be answered only in the framework of a careful designation of the organizational decision-structure and the specification of the information requirements for the decision process. In fact, according to many organizational theorists, information processing and

decision-making are inseparable in practice. A decision occurs only on "the receipt of some kind of communication, it consists of a complicated process of combining communications from various sources and it results in the transmission of further communications."¹³

Mr. Paul Funk, executive vice-president of McCann/ITSM, contends that marketing information management is the basic business of business:

Only by putting together an over-all construction of the total marketing process; only by identifying—and in most instances by visualizing—interrelationships, information flows, concurrent and sequential work patterns and critical decision points can one truly grasp control of the bewildering and complex range of activities engaged in by the present-day major corporation.¹⁴

The pursuit of marketing information systems, then, really involves much more than expanding and automating the data gathering process. It is an inextricable part of the larger pursuit of more efficient forms and methods of organization for marketing management.

We Are Running Late

There is ample evidence that marketing decision-making is becoming more complex, making the need for a systematic approach to information management all the greater. First, there is a growing complexity of the areas that have to be managed, largely a function of the tendency toward larger scale enterprise. Second, as expanded marketing effort takes the firm across existing environmental frontiers, whether geographic, economic or social (or, more likely, all three), the information needs of the enterprise are substantially compounded. It is highly likely that the most crucial constraint currently imposed on the growth of international marketing, for example, is the dearth of pertinent decision-information.

But perhaps the most compelling argument for marketing information systems is the "Information Explosion" itself. The world's store of knowledge has allegedly doubled during the past decade and is expected at least to double again in the next decade.

Information, including management information, is growing by the microsecond and even nanosecond. We cannot turn off the flow. We had therefore better learn to control it—and we are already running late.¹⁵

¹³ John T. Dorsey, Jr., "A Communication Model for Administration," *Administrative Science Quarterly*, Vol. 2 (December, 1957), p. 809.

¹⁴ "Why Industrial Marketers Aren't Using Computers," *Industrial Marketing*, Vol. 51 (November, 1966), pp. 88-89.

¹⁵ Howell M. Estes, "Will Managers Be Overwhelmed by the Information Explosion?," *Armed Forces Management*, Vol. 13 (December, 1966), p. 84.

¹² Same reference as footnote 11, pp. 13-14.