During the past several years the words “marketing information systems” have appeared with increasing frequency in the marketing literature. Unlike some other words which are in vogue and then disappear from sight, this phrase has prevailed and, indeed, provided a great deal of substance and meaning for the entire marketing community.

This paper focuses on marketing information systems, examines them vis-à-vis the traditional market research function, studies the background of the needs which initiated the development of such systems, and reviews the benefits, pitfalls, myths, and structure of marketing information systems. Obviously, with so many critical facets to cover in such a brief period of time, one can do little more than indicate the major considerations that fall within the purview of any of these categories. A comprehensive analysis of marketing information systems requires far more attention than just a brief paper.

Let us turn first to a definition of “marketing information systems.” This is defined as an interacting structure of people, equipment, methods, and controls, which is designed to create an information flow that is capable of providing an acceptable base for management decisions in marketing.

The question that logically arises when definitions of marketing information systems are presented is “How does it differ from the traditional function of marketing research?” Market research ordinarily follows an eclectic path—one time examining the prices of one product line, and at another time reviewing competitors’ packaging innovations, and the like. Usually, the marketing research department provides only a fraction of the data needed to make marketing decisions which have great and far-reaching impact upon the company. This is not to be construed as a criticism of marketing research; all too often marketing research in both consumer and industrial areas fails to receive either adequate budgets, or adequate organizational support.

Furthermore, its mission is different from that of a marketing information system. The latter differs from marketing research in that it provides, for example, continuous study of the marketing factors which are important to an enterprise—not just intermittent examination. It utilizes far more data sources—both internal and external—than does marketing research; and it accepts the responsibility for receiving, analyzing and distilling a far greater amount of information than is the case in marketing research.

The author provides insights into the need for marketing information systems and discusses their benefits, organizational needs, structural requirements, and general limitations. Illustrations of current marketing information systems are provided.
volume of information inputs than market research is structured to do.²

The market research department should be considered to be one part of the marketing information system. The latter would also include or work very closely with such organizational units as: economic research, operations research, long-range planning, the controller, the computer center, marketing planning, and sales management.

Marketing research's traditional role as the primary supplier of information to management for marketing decisions is, consequently, somewhat different in firms with a marketing information system. In the latter, market research concentrates more upon spot projects, fire-fighting, new areas in which the inputs to the system have not yet been established, on data other than that likely to be found in the controller's office or the billing department, and on utilizing a variety of techniques in order to study a particular area which is of momentary interest to the firm. In firms without a marketing information system, market research concentrates more upon such routine information as sales analysis by product line and customer, determination of end-use patterns, and the projection of price and demand trends. It does this on a somewhat eclectic basis.

The Need for Marketing Information Systems

It is not at all surprising that at this time there is a good deal of discussion and development of marketing information systems. Long-term trends, both in marketing and in business in general, are intersecting in the present time to crystallize the systems activity which is presently taking place. Some of these trends are outlined below:

- The increased complexity of business calls for more data and for better performance. Markets are no longer local but are national in scope. The organization that previously may have had firm control of its business in a limited area such as New England, now finds itself on uncertain grounds when competing with similar enterprises in the Midwest, on the West coast, and in the South.
- Product life cycles have become far shorter—thus requiring more skilful management in order to extract a profit during the reduced time available.
- The marketing concept, in which the various marketing functions of the enterprise are organized under one individual—the marketing manager—has taken root in American industry. Since one manager now more than ever before has the responsibility for integrating a far-ranging variety of marketing activities, he needs a good

deal more information so that this can be done effectively.³
- More companies have grown so large that unless they make an intensive effort, such as the development of marketing information systems, their existing marketing information will be dispersed in so many places that its effective use will be virtually impossible.
- The speed with which today's business decisions have to be made has increased, and therefore marketing systems must be developed to provide information for such rapid decision making.⁴
- The advent of techniques which can provide information for effective decision making has gone hand-in-hand with the development of marketing decision tools. Thus, Bayesian analysis, PERT, decision trees, and factor analysis, all require more information than could previously be made available by normal market research approaches.
- Although the marketing information system is not entirely dependent upon the use of computers, nonetheless the evolution of these machines to the role of a relatively commonplace article in many enterprises, and the concomitant development of qualified personnel to work with these computers, means a good deal of information which previously could not be handled by more archaic methods, now can be effectively organized and retrieved.

Benefits of a Marketing Information System

An effective marketing information system may provide the following benefits:

1. It may provide more information within the time constraints required by the firm. Concomitantly,

⁴ Same reference as footnote 1, p. 63.

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better performance could be achieved by the entire enterprise.

2. It may permit large and decentralized firms to use the information which is scattered in many places, and integrate it into a meaningful perspective.

3. It may permit fuller exploitation of the marketing concept.

4. It may provide selective retrieval of information—users can be given only what they want and need.

5. It may provide quicker recognition of developing trends.

6. It may permit far better use of material which is ordinarily collected by many firms in the course of their business activities; for example, sales by product, by customer, and by region.

7. It may permit better control over the firm's marketing plan; for example, it may raise warning signals when something is amiss in the plan.

8. It may prevent important information from being readily suppressed; for example, indications that a product should be withdrawn.

**The Environment Needed for a Successful System**

In a speech presented to the American Marketing Association, Arnold Amstutz of M.I.T. has suggested that successful marketing information systems need four environmental characteristics. First, the system must be designed to provide information in a form which can be used in the present management decision processes. The information given to management, furthermore, must be refined to the point where management is capable of acting upon it. In other words, management must not be deluged with mountains of paper.

Second, management must participate in creating the parameters of the system's capability. After all, it is management that will be using the information derived from this system. Therefore, it is this same management that must undertake the specification of what is needed and how it will be used.

Third, the information which is gathered by the system must be filed in what is known as a disaggregated data file. In such a file new information input is maintained together with previously received input. The net effect of such procedure is that all previous transactions can be recreated by the system at any time. This is particularly important with new systems, since such information systems are bound to change, and an aggregated file, that is, one in which all information is combined, may have to be completely discarded as being unsuitable for the changes made in the system. A disaggregated file, however, contains the inputs in such a way that they are adaptable to any form of system change.

Finally, the system must be designed so that it can evolve to fit the continually changing needs of the enterprise. Obviously, when the system is first introduced it will only use a few of the many techniques that are available. As the system users become more familiar with its capabilities, their needs will evolve. Thus, the system must be designed so that it too can cope with these new needs.

**Elements of the Marketing Information System**

Figure 1 shows a graphical representation of the marketing information system. The input and output shown in that Figure are illustrative only. Obviously, they will change, depending upon the need of the enterprise. Not only will they change within any one firm over a period of time, but they will differ from one enterprise to the next.

The inputs to the system are those items of information which can be used to generate the required output. The output consists of that information which is needed by marketing management for decision-making purposes. The illustrative outputs shown in Figure 1 can be considerably augmented by an effective system. For example, the sales category shows that the sales volume will be indicated by product, by product line, by customer class, and by region. For each of these categories we can also design the system so that it will print out the budgeted or forecasted sales figure, the cumulative sales to date, and a graphical representation of curves of cumulative sales, both actual and forecast. Similar expansion of output can be obtained for the profitability data.

The section of the chart marked "Processor" is the system itself. This system consists not only of hardware and software, but of the human machinery which is necessary to carry out the mission of the system, and to accomplish the required marketing objectives. The "Processor" sector contains a number of sub-systems, each devoted to a different facet of the input and output sectors. Thus, there could be a sub-system dealing with price, one with marketing personnel, another with life cycle analyses, and others with sales, profitability, market share, and advertising effectiveness.

There are several types of controls which can be imposed upon a system.

1. The MIS can be managed by some group within the firm.

2. The MIS can be at a higher stage on the information-decision hierarchy than merely the

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Marketing Information Systems

![Diagram of the marketing information system]

“information system” stage—the stage at which the system provides timely, reliable, and sufficient information for managerial decisions. It may have advanced to the stage at which control capabilities are coupled to the system in the form of remote consoles, cathode ray tube terminals, and other devices by which the manager and the information system are joined into an interactive man-machine problem-solving network.7

3. Control or “limits” exist which are set by the market and the environment in which the firm operates; examples are social, legal, political, economic, financial, technological, and temporal.

4. The “feedback” loop also serves as a control. It monitors the output so that the nature of the input can be varied in order to provide subsequent output in accordance with the current decision-making needs of the marketing executive.

It should be noted that the third type of control mentioned above is utilized in the processor of the system shown in Figure 1. For example, if we are concerned with an information system for an enterprise manufacturing women’s bathing suits, we know we need a system which has an extremely fast capability for gathering and processing information. Markets such as those for bathing suits change with extreme rapidity, and last week’s information is of relatively little value. On the other hand, if we were dealing with the manufacture of office furniture, the system would be quite different; although there are style changes and technological advances in such a business, these changes are, relatively speaking, far slower. The information system’s controls, accordingly, must be changed to correspond with this different sort of market.

Who Is Responsible for the System?

One of the basic decisions which has to be made early in the program of any company that wants to develop a marketing information system is that of fixing the responsibility for the daily operation of the system. There are several aspects to this that must be considered.

The primary support for the system must come from top management. Unless the principal executives of the organization, both in marketing and in other areas, are firmly convinced and will support fully the operation and the implementation of a

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marketing information system, it is bound to fail.\(^8\) Beyond this concept of top management support is the problem of whether or not the system should be run on a daily basis by either a specialist in data processing, or an operating manager who is more of a generalist and is consequently more knowledgeable within the area of marketing itself.

Both the specialist and the generalist have their supporters and critics. The advantages of specialist managers are obvious. They have the technical skills for running a system. On the other hand, their deficiencies are equally obvious. Too often the specialist simply has not had a sufficient background in marketing so that he can properly handle the principal flows of information that are relevant to the important marketing decisions. As a result, costly mistakes are inevitable. Also some specialists overemphasize the system at the expense of the job which the system is designed to accomplish.

The generalist, or operating manager, has the advantage of a detailed knowledge of the areas about which decisions are being made. This can be extremely valuable in designing the system output. The manager, however, is handicapped by his lack of knowledge relative to information-handling techniques. Such generalists tend to concentrate upon information which will provide immediate profit to the marketing sector at the expense of the long-run profitability.

Responsibility for the system should rest with the top marketing executive who, after all, is accountable for the performance of the entire marketing sector of the enterprise. This is not intended to infer that the specialist-technician should not have a good deal of responsibility; nonetheless, the task which is being performed is a marketing task and it is the marketing manager's responsibility to supervise all marketing activities. In consequence of the duality of roles, the last several years have seen the development of a new position title in many business firms, that of director of marketing information services. This title is ordinarily held by an individual who is primarily a technical specialist who, hopefully, has some marketing knowledge as well, and who is capable of utilizing expert staff assistance in marketing. This individual usually reports to the marketing manager who, as stated above, really bears the ultimate responsibility for all facets of the marketing task.

Organizational Problems of Marketing Information Systems

In the few years in which marketing information systems have been used, it has become obvious that there are some typical organizational problems which occur unless extensive foresight, as well as care in execution of the system, is exercised. These are briefly discussed below.

1. Faulty Integration between Sub-systems

It must be recognized that the marketing information system is just one part of a total management information system; the other part embraces such areas as finance, production, and personnel. Too great an emphasis upon the objectives of any one of these parts without constant realization that it is the entire enterprise's efficiency which must be optimized can result in a failure of the system to achieve its objectives economically. The problem sometimes becomes particularly acute when the output from one organization is needed as part of the input for the other.

2. Changes in Jobs and Skill Requirements

The implementation of a marketing information system will require the marketing department to bring new skills into its organization and to create new job functions to utilize these skills. In addition to these totally new jobs and skills, there will certainly be changes in existing work patterns. After all, many new documents and new information will be generated, and the traditional ways of handling information will probably no longer be adequate. Consequently, we are going to have problems of personal conflict, of adjustment to new types of work, of dissatisfaction with new work environments, of human inertia, of obstruction, and the like.

3. Relationships between the System's Designers and the System's Users

Those who are using the system's outputs must get involved with the system's design—otherwise there will be excessive friction at the interface between designers and users. Some marketing decision makers with authoritative positions in the enterprise must be assigned to work with the system's designers. It must be borne in mind that the users must develop plans for utilizing system output. They should not simply expect a mass of data to be deposited with them several times each day, and then sit around and wonder what to do with it.\(^9\)

The System's Relation to other Corporate Functions

One question that must be raised is "What is the relationship of the marketing information system to the other functions of the organization?" The

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The easiest way to present this relationship is in the form of a chart, and this is shown in Figure 2. Here, it can be seen that the marketing information system is a part of the marketing area. The latter area is led by a single marketing executive who, ordinarily, would have a title such as vice president of marketing, or marketing manager. The organization shown is one for a company which is organized along what has come to be known as the marketing management concept. This concept requires all of the marketing operations of the enterprise to be so organized that one individual only has responsibility for all such operations and that he be equal in rank with other top corporate executives. The latter relationship is also shown on the chart and indicates that the vice presidents of production, research and development, finance, and so forth are in the same echelon as the top marketing executive.

Relation to the Marketing Plan

The marketing plan is the basic working document by which the marketing department conducts its activities. Obviously, every facet of this plan requires information so that appropriate decisions can be made. The output of the marketing information system hence provides the input to the marketing plan for these marketing decisions. Therefore, the relationship of the information system to the marketing plan is two-fold: (1) the marketing plan uses the output of the information system, and (2) provides control criteria for the marketing information system.

A Brief Look at some Operating Systems

Chemstrand

The Chemstrand Company has an advanced marketing information system. For example, the Chemstrand system will provide detailed sales analyses by product, by category of product, by sales district, type of process, type of end-use, the type of mill, and so on. Reports are sent to the company's salesmen concerning their transactions with their customers; different marketing groups get specific reports which are relevant to their particular sphere of interest. For example, product managers receive analyses of the marketing operations of their particular area of responsibility. Records are kept of consumer behavior in 7500 households which represent a sample of the national market, so that these socioeconomic backgrounds and attitudes can be analyzed to determine buying trends and other related information.

The system also keeps close tabs on Chemstrand's competitors and, in addition, also turns out a number of short-, medium-, and long-range forecasts. These forecasts are made by industry, by company, and by end users. Projections are made for approximately 400 different products on a short-term basis.

Lever Brothers

Lever Brothers has a system that produces 2500 different pages of daily reports, 3000 pages of weekly reports, and 40,000 pages of monthly reports. Thus, managers have daily tabulations for the sales of their brands by geographic districts. Data are also provided as to whether the sales quota is being achieved, and how close to this the salesman is coming. It is possible to compare brands by zones, by districts, and by regions.

Every month there are reports on more than 3000 important customers and, best of all, they are available during the first week of the new month. These reports show a variety of information such as how well a particular account is doing vis-à-vis its performance in a prior year.

**RCA**

Another example can be found with RCA, whose system can provide sales analyses by product, by territory, comparisons with quotas, and so forth. They have a program to determine the amount of each model of the product line which is to be sold to each distributor. It is based on the distributor’s sales history, and the knowledge of his territory’s market potential, as well as RCA’s market share within that area.

Another program combines 100 variables to determine the gross margin for individual models or families of products. In addition, there are monthly reports which show sales by product, by dealer county area, and by distributor. These outputs represent, of course, only a fraction of the output of the RCA system.12

Myths and Pitfalls of Marketing Information Systems

Because there has been so much talk about marketing information systems and very little hard fact concerning how well they have operated under a variety of industry types and conditions, a number of myths have evolved concerning the nature and capabilities of marketing information systems. Of course, there are some pitfalls that are well recognized, since they are generally the same as those associated with other information systems, such as management information systems.

Several of these myths and pitfalls are briefly discussed below:

- Not every firm should have a computer-oriented marketing information system. While it is true that it is fashionable to talk about one, there are some companies that are equipped neither to run one nor to utilize the output. For these firms the expenditure on the development of this system would be a waste.

- The marketing information system should not be based solely on the computer. While this is a vital tool, there are still many “old-fashioned” forms and procedures which are quite good.

- Be careful of a revolutionary effect upon the enterprise. The firm simply may not be able to handle both the personnel problems and the output of the system.

- The marketing information system is not a substitute for basic market research of the traditional type. Such market research is still required for specific studies of particular marketing problems and for handling information needs which are outside the sphere of interest of the system.

- It is too easy to accept a computer print-out with 100% confidence, simply because it is neat and voluminous. However, this does not make it right and the marketing manager must remember that outputs are only as good as the inputs used to generate them.

- Marketing information systems are not new. Obviously, they have existed for some time, since managers have for a long period had reliable and comprehensive and timely sources of information. What we do have at the present time is a capability for making the system far more comprehensive and for equipping it to handle vastly increased quantities of input with effectiveness and promptness.

- The same marketing information system cannot serve all levels of management, nor can all levels benefit equally from such systems. The top managers, for example, require information which is of such a nature that it permits them to make strategic choices. Middle managers and lower level supervisors require different types of information.13 Within any one level, the sophistication of the system must be selected carefully so that it is compatible with the managers who will use it.

- Because computers have such an enormous capacity, there is a tendency to make the information too detailed and wide-ranging. This is a mistake. The marketing manager should be provided with an amount of information sufficient for decision making and no more. If there is too much information, that which is relevant and useful will be hidden in the mass of excess input and output.

Insofar as the marketing manager is concerned, the proper design of the marketing information system is one which emphasizes not the outpouring of great masses of data, but rather the filtration, condensation, and evaluation of masses of information into more manageable form.14

- You cannot expect to develop at one time a total system that will handle all of the marketing information needs of your enterprise. Instead, the system must be developed and implemented in small, manageable stages. How much time is required for the development of the system to its fullest capacity is very difficult to state. One company may be able to implement a fairly comprehensive system in one year, while other companies may require five or ten years before their systems are fully operational.

- There is a danger in the fact that many marketing managers do not know what information they really need, yet one of the precepts of designing a good marketing information system is that the marketing manager must be consulted.

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12 Same reference as footnote 10, pp. 59-60.


14 Same reference as footnote 8, p. 152.
Unfortunately, the great tendency is for people to demand more information about areas of which they are uncertain. The result, of course, is that in those decision-making areas about which the marketing managers are not too confident, they require the system designers to provide far more information than they really need.

- Do not take it for granted that simply because your marketing personnel will be given more information than they had previously they will know what to do with it. Therefore, during design of the marketing information system, firm steps must be taken to insure that the managers are prepared to use the output of that system effectively.

- The final pitfall is that too often managers feel that they do not have to understand how the system works, but merely to take advantage of its capability. While this is true to a certain degree, nonetheless it requires them to place too much faith in a system which simply may not be functioning properly insofar as their decision needs and marketing objectives are concerned. While the managers who use the system need not be specialists in its design and implementation, they must be sufficiently aware of the mechanics of the system so that they can evaluate its output and provide suggestions for improvement of the system.

**Summary**

Marketing information systems are part of the marketing wave of the future. They are important, and they are beginning to function very well. However, like any radical change imposed upon an organization, they can be very expensive and have great potential for damage. Hence, they must be used carefully and with a recognition of their potential for damage. The rewards of struggling with the many problems of developing a successful system are, however, well worthwhile.

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**MARKETING MEMO**

**Grobins and Spring . . .**

. . . no study, whether a true experiment or not, ever proves a theory; it merely probes it. True experiments, as well as other designs, are vulnerable to the threats of external validity. Generalizability involves considerably more than the relation of the sample of research subjects to some population. Generalization involves research subjects, measurement variables, conceptual variables, and test settings. If a second study should happen to replicate a first with respect to all four categories of features just noted and if it should yield similar results, the second study would provide confirmatory evidence of the findings of the first. If a third study should deviate from the first in some respects—e.g., using college seniors where the first had used sophomores, and/or using a new scale for the same conceptual variable—and if it produced results similar to those in the first study, this third study would help not merely to confirm the original relationship but to extend its generalizability with respect to categories of research subjects and measurement variables. By such accretion we acquire confidence in the range of generalizability.

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