

## D.4 Marketing Information Systems

### CHARACTERISTICS OF MARKETING INFORMATION SYSTEMS

A marketing information system serves as a source of performance information that can be used in evaluating marketing programs or in projecting the outcomes of marketing decisions. Marketing information systems also provide information and analysis for the situation analysis that precedes marketing planning and marketing decision making.

**What is a Marketing Information System.** A **marketing information system** is an interacting set of procedures and methods for the systematic collection, processing, and reporting of information for marketing decision making. Little, who stresses the use of models and other management science techniques in these systems, terms them **decision support systems**.<sup>1</sup> Modern marketing information systems are dependent upon computers for analysis, storage, and retrieval of marketing data and for application of models and statistical routines.

The use of marketing information systems has grown with the availability and capability of computers, but more importantly, with the explosion in marketing information and the increased stress placed on the use of data in decision making. Kotler suggests that marketers are dissatisfied with the quality of the marketing information available to them.<sup>2</sup>

- *Amount.* There is too much information of the wrong kind and not enough of the right kind.

<sup>1</sup>John D. C. Little, "Decision Support Systems for Marketing Managers," *Journal of Marketing* 43 (Summer 1979), pp. 9-27.

<sup>2</sup>Philip Kotler, "A Design for the Firm's Marketing Nerve Center," *Business Horizons* (Fall 1966), pp. 63-74.

- *Location.* Information is dispersed throughout the company and difficult to locate.
- *Availability.* Information is sometimes suppressed for personal reasons and hence not available.
- *Timeliness.* Information often arrives too late to be useful.
- *Accuracy.* Information is often provided in a form that makes it impossible to verify its accuracy.

These shortcomings in information availability can be overcome with a marketing information system. By providing better quality information, a marketing information system serves three functions for the marketer.<sup>3</sup>

1. *Control/Evaluation Function.* Marketing information systems measure actual outcome of marketing programs and decisions. Actual outcome can be contrasted with the planned outcome and corrective action taken to improve performance (see GLOSSARY entry D.3).
2. *Planning Function.* Marketing information systems serve the **marketing planning process** by providing a flow of control and environmental monitoring information that goes into the **situation analysis**, the initial stage of the planning process (see GLOSSARY entry A.17).
3. *Decision-Making Function.* Marketing information systems contain models and statistical techniques that permit the marketer to use the data in the system to predict the outcome of decision alternatives, and thereby select the most satisfactory decision option. (See GLOSSARY entry D.5, **projecting outcomes**.)

Marketing information systems should be distinguished from marketing research. Marketing research provides decision-making information on a one-time or project basis for

<sup>3</sup>Donald F. Cox and Robert E. Good, "How to Build a Marketing Information System," *Harvard Business Review* (May-June 1967), pp. 145-54.

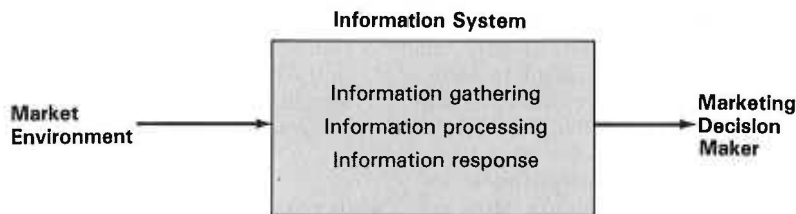


FIGURE D.4-1

## A Marketing Information System

a specific marketing problem (see GLOSSARY entry A.11). Marketing information systems provide a continuous flow of information and the capability of applying that information to a variety of problems over a period of time. The **marketing research process** is frequently incorporated in a marketing information system as one of the techniques available for information gathering. One other distinction is that marketing information systems are generally designed at the level of the business rather than the individual product. As such, they are able to provide information for the opportunity analysis of the **strategic market planning process** used for the business as well as for the marketing planning process used for individual products<sup>4</sup> (see GLOSSARY entry A.20).

**Elements of a Marketing Information System.** A marketing information system can be thought of as having three components: (1) an information gathering section with the capacity to monitor and collect data from the environment; (2) an information processing section having various techniques, programs, and models for the processing, analysis, and storage of data; and (3) a response section with the capacity for regularly reporting information and responding to inquiries using the information processing capability. The system has two external interfaces: It gathers information from the environment and provides information to marketing decision makers. The marketing

information system is depicted in Figure D.4-1.

■ **Information Gathering Section.** The marketing information system gathers information from the external environment including consumers, and it gathers data internally from the accounting system and other internal control systems. Both primary and secondary data are collected. This section of the system requires three data collection components. The external monitoring component operates continuously to gather information on events, trends, and changes in the external environment. Included would be surveillance of competition, purchase of information services, such as store audits or consumer panel data, monitoring of consumer trends, and tracking of technological, economic, and regulatory changes.

The internal monitoring component gathers information from control systems within the firm including sales, inventory, cost, and product quality data. In most systems, sales analysis, providing data by product, by territory, by channel, and by time period, is a most important part of this component. The third component in the system is marketing research that provides the capability to gather primary data on the environment and on the outcomes of marketing programs. The marketing research component provides the system with the capability of gathering primary data in response to special problems facing the business or a product.

■ **Information Processing Section.** The heart of a marketing information system is the information processing capability that transforms the data gathered by the information gathering section into storable and usable form. The information processing section has three elements or capabilities. First, it has a data base where information gathered from internal

<sup>4</sup>See David B. Montgomery and Charles Weinberg, "Toward Strategic Intelligence Systems," *Journal of Marketing* 43 (Fall 1979), pp. 41-52.

and external monitoring can be stored and from which it can be retrieved. Ideally, data are stored in a disaggregated or micro form.<sup>5</sup> This permits more flexible retrieval of data in new combinations that meet the needs of different problems or decisions.

Second, the information processing section has a statistical analysis capability. Most systems employ statistical computer packages that tabulate raw data, construct tables, prepare frequency distributions, and calculate various measures of dispersion, central tendency, and correlation. These statistical analyses put the data into forms that are more usable for the decision maker or for decision-making models. The third component in this section is made up of computer-based models. These models, which may range from the very simple to the highly complex, provide the marketer with the opportunity, using information from the data base, to project the outcome of alternatives before settling on a final decision. Models that might typically be used would assist in setting inventory levels, setting an advertising budget, or in determining the outcome of a price change.

- *Information Reporting Section.* The information reporting section provides the interface between the information processing section and the system user. It is responsible for presenting information from the system to marketers in a form that is usable for decision making. A marketing information system provides two types of reports to system users: status reports and response reports.<sup>6</sup> Status reports describe conditions as determined from monitoring some internal or external variable. Reports of competitive activity or analysis of product sales would be examples of status reports. The responsibility of the information reporting section is to determine who needs this information, condense the information so that it is not overwhelming, and put it in a format that will highlight the significant findings.

The second type of report provided by the system is a response to a user inquiry about the projected outcome of a possible decision. For example, if the price of Product X is lowered to Y dollars, what will be the effect on sales, or if the level of inventory on Product X is lowered to level Z, what will be the effect

on out-of-stock? To answer these inquiries, the system applies information from the data base to the models or statistical routines in the information processing section to generate a projected outcome of the decision.

## BUILDING AND USING A MARKETING INFORMATION SYSTEM

Despite the promise that they seem to offer, formal marketing information systems have not been widely implemented. Most decision makers continue to cling to traditional and often informal sources of information in making decisions.

*The Process for Developing a Marketing Information System.* Installation of a marketing information system is a time consuming and expensive undertaking. It is generally agreed that there is no one design that will meet the needs of all organizations and that design is organization specific. Therefore the beginning point in developing a marketing information system lies in understanding the information needs of the marketing decision makers in the organization.

Systems experts with experience in installing marketing information systems suggest that the installation decision should consider these issues.<sup>7</sup>

- *Organization.* Successful installation of a marketing information system requires involvement of top management and the active cooperation of a number of marketing and nonmarketing functions including sales, marketing research, computer operations, and finance and accounting. This requires finding an organizational approach that will gain the involvement and acceptance of all parties. Kotler suggests that a special task committee be formed, under the direction of the top marketing executive, with representatives from each area that is a user or supplier of information.<sup>8</sup> Cox and Good favor appointment of an information coordinator with responsibility

<sup>5</sup>See Cox and Good, "How to Build," p. 153.

<sup>6</sup>Little, "Decision Support," p. 21.

<sup>7</sup>The organization of installation issues is suggested by Cox and Good, "How to Build," pp. 142-54.

<sup>8</sup>Kotler, "A Design," pp. 68-70.

for reviewing and coordinating the work of the various contributors to the system and for representing the needs of the marketing users of the system.<sup>9</sup>

- *Sophistication.* Cox and Good suggest that a balance be maintained between the management sophistication of the user and the sophistication of the system design. They feel that if the sophistication of the information system is of a significantly higher quality level than that of the management, the result will be lower quality decisions because of manager rejection of the system.<sup>10</sup>
- *Development Strategy.* Effective development of a marketing information system typically proceeds by sequentially upgrading the existing system rather than by attempting to install a complete system all at once. Kotler suggests beginning by tracing existing internal flows of information and improving them in terms of timeliness and completeness.<sup>11</sup> Hulbert, Farley, and Howard suggest an approach for describing an existing information system as a basis for recommending improvements.<sup>12</sup> Cox and Good suggest developing the system by building one complete subsystem at a time. They suggest, for example, that the process might begin by building an exception reporting system that would alert marketing managers to deviations from plan.<sup>13</sup>
- *Information Requirements.* Design of a marketing information system must center on the information needs of the users of the system. The system design should proceed from back to front—from the users needs back to definition of information to be gathered. If the design ignores user needs and starts with information already available or information easily or traditionally gathered, the system will meet with little manager use. Kotler suggests that potential system users be surveyed in depth to determine their information requirements and that the long range plan for developing the system be based on those requirements.<sup>14</sup>

*Applications of Marketing Information Systems.* If designed to be responsive to marketer needs, marketing information systems will be widely used by decision makers. Four applications of marketing information systems are suggested below.

- *Marketing Planning.* The marketing information system is related to the **marketing planning process** in two ways.<sup>15</sup> The first stage of marketing planning requires a **situation analysis** that analyzes the internal and external environment facing the product (see GLOSSARY entry A.17). A marketing information system provides the information upon which the situation analysis is based.

Marketing planning also provides essential input to the **marketing information system**. In order to perform its control function and alert managers when programs are not performing according to plan, the information system needs standards of expected performance. These standards or criteria for acceptable performance are provided by the marketing planning process.

- *Strategic Marketing Planning.* The **strategic market planning process** sets direction for a business rather than an individual product (see GLOSSARY entry A.20). The process begins with an opportunity analysis that determines the problems and opportunities confronting the business. Since marketing information systems are designed business-wide rather than for each individual product, the system can provide the information needed for the opportunity analysis. Montgomery and Weinberg suggest three classes of information needed for strategic market planning: (1) defensive intelligence designed to alert the planner to threatening changes in the environment; (2) passive intelligence designed to provide benchmark data for objective evaluation; and (3) offensive intelligence designed to identify opportunities.<sup>16</sup>
- *Marketing Decision Making.* Marketing information systems serve the decision maker by both retrieving and reporting on information needed by the decision maker and by provid-

<sup>9</sup>Cox and Good, "How to Build," pp. 150-51.

<sup>10</sup>Ibid., pp. 151-52.

<sup>11</sup>Kotler, "A Design," p. 69.

<sup>12</sup>James Hulbert, John U. Farley, and John A. Howard, "Information Processing and Decision Making in Marketing Organizations," *Journal of Marketing Research* 9 (February 1972), pp. 75-77.

<sup>13</sup>Cox and Good, "How to Build," p. 152.

<sup>14</sup>Kotler, "A Design," p. 70.

<sup>15</sup>Conrad Berenson, "Marketing Information Systems," *Journal of Marketing* 33 (October 1969), pp. 16-23.

<sup>16</sup>David B. Montgomery and Charles B. Weinberg, "Toward Strategic Intelligence Systems," *Journal of Marketing* 43 (Fall 1979), pp. 41-52.

ing analysis of stored data in order to suggest alternative marketing actions and to project the response to alternative marketing actions. This latter response reporting depends upon the use of statistical analysis and mathematical models that are part of the information processing section of the system. (See GLOSSARY entry D.5 on **projecting outcomes**.) Little suggests that the greatest impact of information systems on marketing management will come from this application of analytic techniques and models to decision making.<sup>17</sup>

- **Control and Evaluation.** By continuously monitoring performance and comparing it against control standards established in the **marketing control system**, the marketing information system can provide early warning when marketing programs are not meeting expectations or when environmental conditions are not as anticipated. Either case calls for revision of programs to improve performance. Sales analysis and profitability analysis, both of which can be supplied by the information system,

<sup>17</sup>Little, "Decision Support," p. 25.

are essential components in control of marketing programs<sup>18</sup> (see GLOSSARY entry D.3).

### SUGGESTIONS FOR FURTHER READING

- BERENSON, CONRAD. "Marketing Information Systems." *Journal of Marketing* 33 (October 1969), pp. 16-23.
- COX, DONALD F., and ROBERT E. GOOD. "How to Build a Marketing Information System." *Harvard Business Review* (May-June 1967), pp. 145-54.
- KOTLER, PHILIP. "A Design for the Firm's Marketing Nerve Center." *Business Horizons* (Fall 1966), pp. 63-74.
- LITTLE, JOHN D. C. "Decision Support Systems for Marketing Managers." *Journal of Marketing* 43 (Summer 1979), pp. 9-27.

<sup>18</sup>Richard A. Feder, "How to Measure Marketing Performance," *Harvard Business Review* (May-June 1965), pp. 132-42.

## D.5 Projecting Outcomes

### THE ROLE OF OUTCOME PROJECTION IN MARKETING DECISION MAKING

Outcome projection is a process that helps the marketer evaluate alternatives and verify that a decision meets the needs of a problem.

**Verifying the Decision.** The process for making a marketing decision can be thought of as having three steps (see Chapter 3). In step one, the problem is defined; in step two, the problem is analyzed and one or more alternatives developed; and in step three, the decision is verified.

The purpose of outcome verification is to enable the marketer to evaluate alternative solutions to a problem (alternative decisions) to determine which one would best solve the problem. The process of verifying the outcome of a decision has four steps:

1. Select an alternative and project its outcome.
2. Compare the outcome to the problem and refine the alternative as necessary.
3. If there are other alternatives, repeat steps 1 and 2 for each one.
4. Compare the outcomes for each of the alternatives and select the alternative with the best outcome as the final decision.

Outcome projection, as can be seen above, is part of the outcome verification process. **Outcome projection** consists of estimating how the problem situation will change if the alternative decision is put into effect. It provides the basis for choosing between alternatives and for deciding if a decision will solve the problem for which it was designed. Outcome projection also suggests ways in which a possible decision can be refined so that it better solves the problem.

Outcome projections can be both finan-

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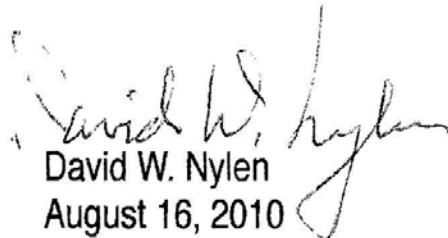
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