

Chapter 1

INTRODUCTION

This book was written to present elements of an organized behavioral theory of market interactions and to suggest an approach to management based on the use of microanalytic computer simulations of interactions within the marketing environment. It focuses on the development and implementation of behavioral models and system configurations designed to provide a formal quantitative structure within which management problems involving the environment external to the firm can be defined and analyzed.

The models and methodology described in the following chapters have been successfully applied in management systems concentrating on consumer and industrial product markets. They have also served as the basis for new approaches to undergraduate, graduate, and executive development courses in marketing management and market-oriented information systems.

Objectives

Material presented in the following chapters has been organized to achieve a series of objectives:

1. Develop a conceptual framework within which salient attributes of a market environment or management problem may be delineated.
2. Define a limited set of elements that may serve as the focus of systematic analysis.
3. Develop a theoretical structure through which the interrelations

- between these elements may be described, measured, and analyzed.
4. Express relationships between elements and processes in quantitative and measurable terms.
 5. Summarize noted relationships in generalized models consisting of properly dimensioned systems of equations amenable to computer simulation.
 6. Evaluate the precision, accuracy, and validity of resulting simulation models.
 7. Assess the contribution of simulation-based systems to education, policy planning, and management decision making.

Methodology

The first step in moving toward a realization of the noted objectives is to develop an over-all description of important factors in the marketing environment. This qualitative description serves as the basis for a nonmathematical but orderly structure within which key elements and processes may be defined.

The second step involves the design of gross macroflow models encompassing previously defined elements and processes. These preliminary descriptions define major interaction patterns and, as such, serve as the cornerstones of more complete and detailed subsector models.

The third step encompasses quantification of relevant behavior and development of sector models. The models produced at this stage must provide sufficient scope and refinement so that a representation of the total marketing environment may be synthesized by combining them in a single simulation.

The final step is implementation. Problems of validating simulation performance against data obtained from the actual environment must be considered. Other difficulties inherent in the use of the proposed approach by managers and educators also require evaluation.

Perspective

Before outlining the content of following sections it may be useful to establish a perspective.

A Corporate Management View

Relationships and interactions within the business environment will be considered from the point of view of a producer and marketer of

goods or services. From this vantage point, attention will be focused largely on the environment external to the firm in an effort to relate variables manipulated by management to processes beyond their direct control.

The central objective will be to develop a framework within which behavior relevant to the manager may be described. It will be assumed that the manager is concerned with the generation of sales at profitable levels under conditions that permit short-run solvency and long-term capital appreciation in the presence of uncertainty.

This perspective requires that tests of relevancy be pragmatic. In deciding to include or exclude a particular factor from representation, management's ability to influence or control that factor must be given major consideration.

Questions of measurement are particularly important in this context. Because meaningful application of theory or structure is dependent on management's ability to relate model states to conditions in the business world, each variable found within the model structure must be measurable in the actual business environment.

The Consumer as Raison d'Etre

In the current literature, it is generally agreed¹ that management's perspective should be expanded to encompass the world outside the firm. Numerous authors advocate a shift from concentration on internal processes to concern for synthesis of a total marketing system oriented toward the external environment.

Management must think of itself not as producing products but as providing customer-creating value satisfactions. . . . Otherwise, the company will be merely a series of pigeonholed parts, with no consolidating sense of purpose or direction.

In short, the organization must learn to think of itself not as producing goods or services but as buying customers, as doing the things that will make people want to do business with it.¹

The well-known management writer, Peter Drucker, emphasizes this perspective in his book, *The Practice of Management*.

If we want to know what a business is we have to start with its *purpose*. And its purpose must lie outside of the business itself. In fact, it must lie

¹T. Levitt, "Marketing Myopia," *Harvard Business Review*, Vol. 38 (July-August 1960), p. 56.

in society since a business enterprise is an organ of society. There is only one valid definition of business purpose: *to create a customer*.²

Emphasis on Policy Management

It has been suggested that a focus on aspects of the business environment external to the firm — those aspects often associated with marketing management — is most appropriate for “policy management.” In *The Practice of Management* Peter Drucker argues:

Because it is its purpose to create a customer, any business enterprise has two — and only these two — basic functions: marketing and innovation. They are the entrepreneurial functions.

Marketing is the distinguishing, the unique function of the business. A business is set apart from all other human organizations by the fact that it markets a product or a service. Neither Church, nor Army, nor School, nor State does that. Any organization that fulfills itself through marketing a product or a service, is a business. Any organization in which marketing is either absent or incidental is not a business and should never be run as if it were one.³

It is difficult to find a functional management area in which the gains that may be realized by effective quantitative structuring are greater than in marketing. The need for a systematic (if not scientific) approach to marketing has been discussed frequently in the literature. The following statement of marketing’s problem, originally presented in *Management Science* and often referenced, is representative.

The practice of administration in marketing has been handicapped by a type of cultural lag. In every phase of marketing operations the application of systematic methodology to the management task has trailed by approximately one generation the experience in the field of production.

. . . Progress in the construction of an organized methodology of management techniques and in the generalization of conclusions from observation and experiment in the decades between the two great wars was generally oriented in the factory or used the production process as a take-off point for reaching the general management level.

. . . There has been no revolutionary force in marketing comparable to the introduction of the power driven machine in production. Many

² P. F. Drucker, *The Practice of Management* (New York: Harper and Brothers, Publishers, Inc., 1954), p. 37.

³ *Ibid.*, pp. 37–38.

marketing activities are carried on over extended geographic areas. They lack the simple repetitive characteristics of factory production. They are not easily measured and controlled. To a much greater extent than in production they involve people dealing with people (and it is worth reminding ourselves that even the more limited human element in production has been a continually frustrating factor for management). . . . One dominant influence in the marketing process—the consumer—is outside of management's direct control and is only partially, and until now usually unpredictably, susceptible to manipulation and influence.⁴

Some Implications of the Perspective

The perspective adopted in this study naturally influences criteria of relevancy applied when identifying and structuring pertinent decision areas. Promotion decisions, for example, will be structured in terms of content to be communicated as well as dollar expenditure in media. Communication effectiveness will be evaluated in terms of the extent to which specific product attributes and appeals are associated with the promoting brand in the minds of specific consumers. Promotional impact will be described in terms of changes in consumer behavior as it is directed toward acquisition of the product or service embodying promoted characteristics.

Distributors and wholesalers will be viewed as transfer agents conveying product and information to the consumer. Salesmen will be seen as order and information transfer channels.

The government may be perceived as a constraint, limiting activity within the marketing system. Competitive considerations will focus on the prediction of probable competitor actions and responses.

Research may be viewed as a process through which information of varying relevancy about the environment is collected, structured, and communicated with varying degrees of accuracy. The usefulness of research information will be evaluated in terms of management's ability to assimilate and use research results to refine the usually implicit models against which they test alternatives when making decisions. The research value of particular models or systems will be measured by their effect in focusing research or providing structure through which research findings may be related to decisions.

The ultimate focus of this study is the consumer or industrial purchaser. In describing, modeling, and analyzing processes and interac-

⁴ M. Anshen, "Management Science in Marketing: Status and Prospects," *Management Science*, Vol. 2 (April 1956), pp. 222-223.

tions within the marketing system, the final objective is to relate all elements and interactions in terms of effect on purchase decisions.

An Interdisciplinary Approach

The business environment may be viewed from a management perspective; however, approaches to problems, frameworks of analysis, and hypotheses regarding behavior and interactions within the business environment will be drawn from many disciplines. Economists, political scientists, sociologists, anthropologists, and psychologists have all suggested methodology, concepts, and theory relevant to the problems discussed in later chapters.

In light of the range of problems considered by the market-oriented corporate executive, meaningful management-oriented behavioral theory must draw from the social and behavioral sciences, the physical sciences, and various areas of business administration and economics.⁵ Those concerned with the development of theory in marketing consistently reference "the literature of several intellectual disciplines."⁶

Marketing, political science, and economics have been described as the "policy sciences" by Hans Thorelli, who notes the following common base:

Policy sciences are normative, not in the sense of being inherently biased by one set of values or another, but rather in that they invariably postulate the existence of *some* kind of value structure in terms of which the relative merits of alternative actions may be gauged. These sciences are not limited to studying the process of policy formation in public and private institutions. They are also concerned with specifying decision rules for managerial action.⁷

The perceptive manager shares the psychologists' interest in understanding human behavior and responses.⁸ The work of both the cultural

⁵ See, for example, W. Lazer and E. Kelley, "Interdisciplinary Horizons in Marketing," *Journal of Marketing*, Vol. 24 (October 1960), pp. 24-30.

⁶ W. Alderson and R. Cox, "Toward the Theory of Marketing," *Journal of Marketing*, Vol. 12 (October 1948), p. 142.

⁷ H. B. Thorelli, "Political Science and Marketing," in R. Cox, W. Alderson, and S. J. Shapiro (eds.), *Theory in Marketing* (Homewood, Ill.: Richard D. Irwin, Inc., 1964), pp. 125-136.

⁸ Aspects of psychological theory and approach applicable in the field of marketing are effectively summarized by R. Ferber and H. G. Wales in *Motivation and Market Behavior* (Homewood, Ill.: R. D. Irwin, Inc., 1958). A more limited

anthropologist and the market researcher is based on a common concern for man in his cultural setting.⁹ In a similar vein the common interests of marketers and sociologists have been much discussed.¹⁰

The common focus of manager and economist on the mechanisms of the market place provides still another basis for an interdisciplinary approach. "Microeconomics" ¹¹ provides a useful framework within which to consider certain aspects of the behavior of a firm in a price-oriented competitive market. Concepts relating to the handling of uncertainty, utility, indifference, substitutability, complementarity, and income effects are particularly worthy of comment and will be discussed in later chapters.

The macroeconomist's concern with aggregate population statistics such as national income and gross national product is shared by business planners. Research directed toward gaining an understanding of consumer allocation of funds to expenditures and savings constitutes still another area of mutual interest.¹²

In view of the benefits to be gained from the insights of those associated with these diverse disciplines, there is much to recommend an eclectic approach based on what might be described as "cultural ecology." In discussing bases for a normative theory of marketing systems Wroe Alderson suggested that

. . . Pending the more comprehensive formulation of a general science of human behavior, the available starting points for the marketing theorist include economics and cultural ecology. Economics and ecology are two ways of looking at the relations between living things and the resources

but representative discussion of the contribution of psychologists to understanding of one aspect of consumer behavior is provided by Walter A. Woods, "Psychological Dimensions of Consumer Decision," *Journal of Marketing*, Vol. 24 (January 1960), pp. 15-19.

⁹ See J. Gillin, "The Application of Anthropological Knowledge to Modern Mass Society," *Human Organization*, Vol. 15 (Winter 1957), pp. 24-29. See also C. Winick, "Anthropology's Contribution to Marketing," *Journal of Marketing*, Vol. 25 (July 1961), pp. 53-60.

¹⁰ C. H. Johansson, "Contributions of Sociology to Marketing," *Journal of Marketing*, Vol. 24 (October 1959), pp. 29-34, and R. Bartels, "Sociologists and Marketologists," *Journal of Marketing*, Vol. 24 (October 1959), pp. 37-40.

¹¹ See, for example, P. A. Samuelson, *Economics: An Introductory Analysis* (New York: McGraw-Hill Book Company, Inc., 1955).

¹² H. J. Claycamp, "Characteristics of Owners of Thrift Deposits in Commercial Banks and Savings and Loan Associations," *Journal of Marketing Research*, Vol. 2 (May 1965), pp. 163-170.

which sustain their activities. Marketing as a field of study does not rest comfortably under the label of applied economics. There is an overlap between the tools and concepts of general economics and the analytical needs of the marketing specialist, but far from a perfect fit. The broader framework of ecology holds greater promise for the development of marketing science in both descriptive and normative terms.¹³

Presentation Structure

The following comments are intended as a brief introduction to the organization of material in later chapters. References to "sections" refer to logical segments into which material may be divided for purposes of analysis and do not necessarily denote physical chapters.

Qualitative Description of the Environment

The first section focuses on qualitative description of the environment external to the firm in terms of factors emphasized by contemporary marketing texts. Characteristics derived from this source provide the basis for development of a qualitative analytic structure.

Definition of Macrosectors

The second section is concerned largely with specification and definition. Problems of defining and quantifying elements suggested by the qualitative structure are examined. Previously developed qualitative specifications are refined and an explicit macrostructure is proposed.

Macromodel Development

Development in the third section is based on the proposed macrostructure. Macromodels of processes within the marketing environment are formulated in terms of concepts introduced in the preceding section. Models are categorized in terms of processes affecting (1) the formation, distribution, and consumption of physical product; (2) information generation, communication, and associated response processes; and (3) capital transformation and value flow.

Quantification

The fourth section focuses on the process of quantification with consideration given to measurement techniques, analytic structures, and functional relationships used in developing microanalytic behavioral

¹³ W. Alderson, "A Normative Theory of Marketing Systems," in R. Cox, W. Alderson, and S. J. Shapiro, *Theory in Marketing* (Homewood, Ill.: Richard D. Irwin, Inc., 1964), pp. 92-93.

models. Alternative approaches are discussed and solutions to problems inherent in attempts to quantify human interactions are proposed.

Synthesis

The fifth section is devoted to review of the previously developed structure and to organization of a framework within which detailed sector models may be combined. Interactions summarized in the macro-models of product, information, and capital flow are re-examined in terms of processes occurring within and between sectors of the market.

Management decisions are examined in terms of their effect on interactions between the manufacturing level and other sectors of the marketing environment. Relationships are summarized in inputs and outputs through which the decision maker monitors and attempts to influence conditions within the market place.

Micromodel Development

The sixth section encompasses the formulation of detailed behavioral models representing actions and responses within and between specific sectors of the environment. The first model represents consumer actions and responses. Activities in the retailer sector are considered in the second model. The role of the distributor in a national marketing system is summarized in the third model, while the fourth focuses on salesman behavior. Consideration is also given to the representation of behavior associated with the marketing research function and government agencies.

Implementation

The seventh section introduces problems of implementing simulation models in operating business situations. The use of data to provide function estimates and exogenous input is discussed. Relationships between real and simulated circumstances in particular product situations are examined and processes followed in validating key model sectors are discussed.

Applications

A final section is devoted to a discussion of applications of micro-analytic simulation in education and management. The use of a simulated marketing environment at undergraduate, graduate, and executive development levels is described. The potential contribution of simulation to management decision making is examined with reference to operating simulation-based decision support systems.