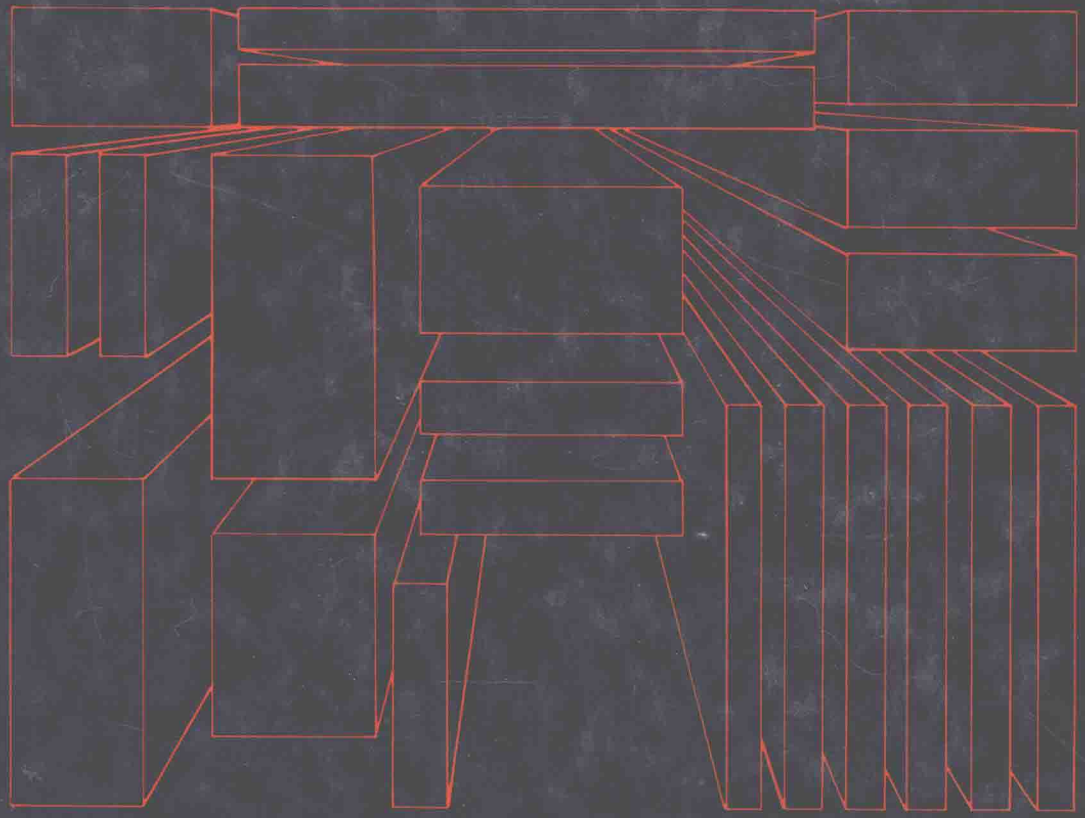
AN ANALYTIC APPROACH TO MARKETING DECISIONS



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Preface

Tell me, I forget.
Show me, I remember.
Involve me, I understand.

ancient Chinese proverb

The results of several comprehensive surveys describing the current state of micro and mainframe computer applications in marketing education and practice closely tie to the authors' objectives in developing this text.

- The rate of diffusion of personal computers and use of decision support software by practitioners does not appear to be matched by their presence in marketing curriculum. One survey indicates that nearly 70 percent of marketing professionals use computers or computer terminals in their work ("Profile of Heavy Users," 1985). Another study of Fortune 500 companies reported that 51 percent of marketing vice presidents have a computer terminal for their own use (McCleod and Rogers, 1982).
- Some schools have integrated microcomputers and software packages into their curricula, especially at the BBA level, but many have lagged behind. A recent study of AACSB accredited schools shows that only 32 and 51 percent of MBA and BBA programs, respectively, require at least some computer usage in coursework (Frand and McClean, 1985).
- Marketing education has suffered from computer illiteracy perhaps more than other business areas such as accounting, finance, and management science. In the same study of AACSB schools cited above, marketing was found to rank seventh of ten functional areas with respect to requiring at least some computer usage for undergraduates and was tied for eighth and ninth place for graduate level instruction.

Typically, marketing students receive exposure to data processing and programming early in their program and then some hands-on experience with statistical packages in a marketing research course. Rarely, however, are marketing curricula structured to use microcomputers and software packages as tools to enhance students' decision-making skills, particularly in upper-level courses.

This book will assist with the development of introductory and intermediate marketing decision support systems' (MDSS) skills within the marketing curriculum. The text stresses DSS software applications which are driven by the theory and the content of marketing management

and marketing strategy, as opposed to the "let's learn software commands first and then let's find some marketing applications" mentality. The book offers an opportunity to institute MDSS applications such as marketing management, marketing strategy, marketing models, marketing analysis, and case in marketing, marketing courses which will enable the student to integrate computer and DSS software knowledge gained from previous marketing courses.

THE FRAMEWORK FOR THE TEXT

The importance and complexity of marketing decisions demands that management have available a marketing decision support system (MDSS). The generic meaning of a decision support system is a matter of some debate, but most would accept the following as representative characteristics of a DSS (cf., Sprague and Carlson, 1982):

- is typically aimed at less well-structured managerial problems;
- combines traditional data processing with analytical models and techniques;
- is interactive and easy to use by noncomputer personnel; and
- emphasizes flexibility and adaptability to changes in both the surroundings and decision making approach.

The framework for this text is based upon Herbert Simon's paradigm of three phases of managerial decision making: intelligence, design and choice. Within this framework, the MDSS technologies identified in this book are categorized into three major levels or types of decision support activities:

1. *Level I: Information management*—storing, organizing, and retrieving of data or information (e.g., internal data base management systems, interactive query, and on-line access to public, private, and company data bases to include bibliographic and text retrieval with communications software).
2. *Level II: Information analysis*—finding, analyzing, and displaying variables, trends, and relationships between variables (e.g., electronic spreadsheets, statistical analysis packages, graphics software and OR/Management Science models).
3. *Level III: Decision analysis*—prioritizing and choosing among alternatives and structuring the components of the management problem; supported by expert systems and executive decision support packages which require that the manager specify goals, criteria, criteria weights, alternatives, and preferences for alternatives on each criterion. Level three allows the effective blend of both quantitative and qualitative inputs obtained from DSS levels one and two above, as well as managerial judgment into the decision analysis.

HOW THIS TEXT IS DIFFERENT

Currently, almost all decision support instruction in the marketing curriculum focuses on information management and information analysis, especially the latter, but short shrifts decision analysis. At present, the use of statistical analysis packages appear to lead the way in utilization in marketing research courses.

Spreadsheet software is also gaining popularity in some marketing offerings. Today's marketing students need to become more intelligent users of the MDSS toolbag. This text suggests a systematic approach for the use of additional software tools such as data base management, presentation graphics, project management, bibliographic retrieval, and decision analysis. Most importantly, the text shows how the software fits the marketing management decision process of situation analysis, marketing program development, and evaluation and control.

The text will provide an opportunity for frequent exposure to the microcomputer with assignments that are central (not peripheral) to the core concepts and analytical methods of marketing management and strategy courses. Hopefully, the text will help overcome a problem in many marketing programs. Marketing students undoubtedly learn to use statistical and financial analysis for marketing decisions, but many upper-level marketing courses heavily emphasize qualitative analysis and stress the use of case and project-oriented pedagogical approaches. Thus, there is a pronounced tendency for marketing courses to emphasize computer instruction in initial and specialized courses (such as principles and marketing research), teaching level one and two approaches, but when more complex marketing management and strategy case problems and real-world projects face the student, computer applications are not emphasized.

Complex cases involving both qualitative and quantitative (or qualitative analysis alone) project exercises are the very types of marketing problems where level three of MDSS is most pertinent.

This book has two objectives. First, it is designed to introduce the readers to the importance of and basic components of a MDSS. Second, the text is aimed at teaching the marketing decision making process and how to use MDSS Level III (decision analysis) approaches. We share a reviewer's reaction that "the severe limitation of most texts on marketing strategy and planning is that they do not address the theoretical and empirical issues associated with decision making." The book's focus is on a new approach for multicriteria decision making called the Analytic Hierarchy Process (AHP) and a computerized software package, Expert Choice (EC), designed to create AHP models.

Both AHP and EC can be applied to a wide variety of marketing analysis, planning, implementation, and control decisions involving selection of alternatives, resource allocation problems, and problems involving multiple decision makers. By emphasizing the EC software package, students can develop substantial depth of proficiency in using the package in a wide variety of applications. The book contains a series of complete software tutorials and provides a large variety of exercises and cases that are designed to help managers and students gain hands-on experience in applying AHP/EC to a host of complex marketing problems. Mastering the basics of EC takes about one hour.

Since the text emphasizes marketing decision making and decision analysis skills with AHP, it is important to note that this methodology is totally compatible with the standard method of case analysis taught at business schools worldwide. In analyzing a case (and using AHP/EC) students must: state the problem, specify the alternatives, indicate the criteria for evaluating the alternatives, perform an analysis of the alternatives (including sensitivity and "what-if" analyses), and indicate a recommended solution and implementation plan. The book stresses using Level I and II approaches involving both quantitative and qualitative factors as key inputs to Level III. Consequently, many of the exercises and cases require the creation of spreadsheets and other analyses *before* constructing a decision analysis model with AHP/EC.

The spreadsheet skills are very basic and the text includes a series of appendices for those readers new to spreadsheet construction. Together with the text and case material, the tutorials provided, and the student version of the EC software provided with the book, the reader has all that is needed to analyze complex marketing problems.

PLAN OF THIS BOOK

This book is organized into three major sections. Part I introduces the reader to basic concepts concerning marketing decision making and the role of marketing decision support systems. Chapters 1 and 2 provide a framework for the marketing decision making process—the intent is to introduce a logical framework that fits the analysis of many marketing problem-solving/ opportunity assessment situations. Chapter 3 reviews major concepts within the field of decision support systems and introduces the major components of DSS. Chapter 4 is devoted to the often overlooked area of decision analysis or executive decision support. After reviewing some of the more commonly used Level 3 DSS approaches, this chapter concludes with a brief introduction to a new decision analysis tool, the analytic hierarchy process.

Part II focuses on the analytic hierarchy process. Chapter 5 provides a complete demonstration of the creation of an AHP model; it explains the mathematics underlying AHP, and shows how this methodology is facilitated with the Expert Choice software package.

Chapter 6 introduces theory underlying AHP and advanced AHP/Expert Choice applications. Both Chapters 5 and 6 provide complete "walk throughs" of the Expert Choice commands required to create introductory and advanced decision analysis.

Part III contains a comprehensive set of decision analysis applications. This section is organized around the stages involved in strategic marketing planning—the situation analysis, the marketing plan, evaluation and control. Each chapter illustrates common marketing decision problems, potential AHP models, and a set of exercises and cases to hone the reader's skill with Expert Choice and other DSS software.

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Contents

1 The Need for Decision Support Systems in Marketing

Part I of this text introduces the reader to basic concepts concerning marketing decision making and the role of marketing decision support systems. Chapter 2 provides a framework for the marketing decision making process—the intent is to introduce a logical framework that fits the analysis of many marketing problem-solving/opportunity assessment situations. Chapter 3 reviews major concepts within the field of decision support systems and introduces the major components of a DSS. Chapter 4 is devoted to the often overlooked area of decision analysis or executive decision support. After reviewing some of the more commonly used Level 3 DSS approaches, this chapter concludes with a brief introduction to a new decision analysis tool, the analytic hierarchy process.

INTRODUCTION

The purpose of this chapter is to introduce you to the importance and complexities of marketing decisions. Both the need and requirements for an executive-marketing decision support system are described along with recent evidence pointing to the use of computer-aided decision support by marketing managers. The three levels of marketing decision support—information management, information analysis, and decision analysis—are briefly introduced. We will begin with two cases that illustrate marketing decision making.

The Marriott Corporation[1]

Bill Marriott ponders several items on his desk. The peak summer season for Marriott's Theme Park Division has just ended, and revenues from gate receipts and concessions are substantially below projections. Several years ago, during the Arab oil embargo/energy crisis, there were attendance problems, but these latest figures were unanticipated.

Also on Bill's desk is the report on a series of focus groups conducted with senior citizens about their housing needs. Marriott has substantial corporate experience in the lodging and institutional-food sectors and is considering lifecare centers as a useful strategic business concept.

Information related to these internal reports are supplemented by a series of *American Demographics* articles and a U.S. Census Bureau report.[2] Some key facts and statistics have been highlighted for his attention:

- The "birth dearth" has replaced the baby boom —the slight baby boom that occurred in the 1980s will be followed by a baby bust in the 1990s.
- Average life expectancy is 75 years—up by 21 years since 1920. The life expectancy of males is 71 and females, 78.
- The 15–24 age group will decrease by 3 percent in the 1985 to 1995 decade.
- The over-65 age group will swell by 18 percent during the next decade—a growth surpassed only by the 35–54 baby boomer generation (up 35% in 1985–1995).

Should Bill present a motion at the next Board of Directors meeting to sell off the Theme Park division and to fund aggressive movement into the lifecare sector?

[1]The following scenario is based upon Frank E. Comacho, "Meeting the Needs of Senior Citizens Through Lifecare Communities: Marriott's Approach to the Development of a New Service Business," *Journal of Services Marketing* 2 (Winter 1988), 49–53; and Paul Fahri, "Marriott Corp. Gambles $1 Billion on Communities for Elderly," *Adweek's Marketing Week*, March 6, 1989, pp. 28 and 30.

[2]*Current Population Reports: Population Estimates and Projections*, U.S. Bureau of The Census, Series P-25 (1984).

Jenny's Gelato

Jennifer Edson is putting the finishing touches on the final report for her project on new venture initiation. The report topic covers a business plan for a new enterprise that she will actually start after completion of her M.B.A. program. Jenny's Gelato will be a retail establishment that will serve gourmet Italian gelato by the scoop or for carryout. Wholesale sales to restaurants in the Washington, D.C., metro area are also included in the plan. This business concept has been in Jenny's mind since she spent a semester abroad in Florence, Italy, during her undergraduate studies and got "hooked" on gelato. (Marriott started with a single root beer stand in Washington, D.C. Could Jenny's Gelato be the start of another services marketing empire?)

Jennifer is pleased with the report. It covers everything from proforma financials to the taste-test surveys she has conducted. A venture capitalist, in fact, thinks the business plan is so good that Jenny has a verbal commitment for $50,000 in start-up capital. Restaurant equipment, store fixtures and gelato-making machines have been priced out and she knows that these fixed costs will eat up the entire $50K. Everything is "all systems go" for a summer opening, except for two areas.

- Should she take the proposal to a *bank*, apply for an *SBA loan*, or use it to obtain additional equity through a *partnership* or small *corporation* form of ownership?
- Negotiations for a retail site have converged to two alternatives both of which would involve leasing space. The site options vary significantly in cost, type of customer traffic, type of building, storefront visibility, and pedestrian traffic.

Jenny has an option on an off-street site in the fashionable Georgetown area of Washington. Twelve-hundred square feet of retailing space is available in a vacant store whose only entrance is via an alleyway off the heavily trafficked (pedestrian and auto) M Street. The attractiveness of the Georgetown location is due principally to the heavy entertainment and retail-shopping traffic. Lots of weekday and evening trade goes on, and Georgetown is a haven for tourists and college students. A long-term lease can be secured for $2,500 a month, but Jennifer would have to absorb nearly all the costs of converting the site to a twenty-to-twenty five seat gelateria. The option to lease has to be exercised in two weeks.

The alternate site is in an attractive enclosed retailing complex on Pennsylvania Avenue, located five blocks from the White House. Shops in this minimall include restaurants, men's and women's clothing stores, a jewelry store, and a series of "international" fast food booth-type operations. The traffic base consists of office workers from within a three-block radius as well as faculty and students of George Washington University, a large urban university whose buildings are all within three or four blocks. One thousand square feet of floor space is available for $2,000 per month on a one-year lease, to be renegotiated by the developer each year. The developer would also take 2 percent of gross revenues. Since the location is new, the developer would custom build wall partitions and other space configurations to suit the tenant.

CHARACTERISTICS OF COMPLEX MARKETING PROBLEMS

Both preceding cases are real situations involving marketing decision-making. Although they differ widely—one involves a multimillion dollar corporation's evaluation of its portfolio of strategic business units; the other, several key decisions that have to be made by a fledgling entrepreneur—they both have the characteristics common to all complex marketing problems.

What makes marketing problems complex? There are many reasons a problem can be considered complex. Most successful marketing managers do not list the factors that contribute to problem complexity, but they certainly know a complex problem when they see one. We will define complex marketing problems as those that possess the following two characteristics: (1) numerous (at least two) feasible alternatives and (2) numerous (at least two) criteria or objectives. It is true that problems that do not fit this definition may indeed be considered complex for other reasons. A problem with no feasible solution is at least difficult and by some other definition may be considered complex. Similarly, a problem with a very large number of alternatives but with only one criterion may, by some other definition, be considered complex. However, these types of problems are typically addressed in the information gathering and alternative generation phases, prior to the decision making phase itself.

Complex problems lead to complex decisions. The following are some of the characteristics of marketing decisions which provide clear indications of the importance and complexity of marketing decisions.[3]

[3]This section is based upon W. O'Dell, A. Ruppel, R. Trent, and W. Kehoe, *Marketing Decision Making*, 3d ed. (Cincinnati: Southwestern, 1984), pp. 1–2; and William R. King, *Marketing Management Information Systems* (New York: Petrocelli/Charter, 1977), p. 9.

- There are *numerous strategic decisions* (e.g., product, place, price, and promotion), and *each decision has several promising alternatives* that are attractive for different reasons. Marketing managers make decisions about target markets, positioning products and services to be offered, prices to be charged, advertising and sales appeals to be used, funds to be allocated to various promotion media and campaigns, personal sales effort to be expended, distribution channels to employ, and a wide variety of other marketing decision variables that help form a marketing plan.
- *Numerous criteria* (some may be quantitative, some qualitative) or *objectives** are used to make decisions as to which alternative is most attractive. Jennifer Edson's site selection decision illustrates this point. It involves a complex evaluation of rental cost per square foot, customer-traffic potential, site characteristics, and a short versus a long-term lease. Another example of a multicriteria decision problem is the new product development process. Hisrich and Peters provide a checklist of twenty-three qualitative criteria to be applied to the screening of new-product ideas.[4]
- Marketing decisions are often further complicated by the fact that the *alternatives are in conflict with respect to each criterion*—for example, in Jennifer's case each site has important strong and weak points, and the alternatives may "pull" in opposite directions.
- Further complication arises because of the nature of the criteria used in marketing decisions. Marriott's decision to penetrate the retiree market involves both *quantitative* and *qualitative considerations* of industry attractiveness and business strength. These considerations range from numerical projections of market size and growth rate to estimates of competitive intensity and of fit with its current strategic business units. On a smaller scale, think of the criteria that influence a firm's media selection decisions. Media planners push lots of numbers around looking at cost per thousand, frequency, reach, and gross-rating points (GRPs), but they cannot forget critical subjective factors: fit with creative strategy, editorial climate, and message impact measured by variables such as awareness, interest, desire, and action. Further, marketing managers often work with data that involve highly subjective measurements and suffer from questionable reliability and validity.
- No matter whether the criteria represent tangible factors such as sales volume, profitability, or share of market or intangibles such as image, fit, or customer intentions, a large amount of marketing information is *inconsistent, incomplete*, or *unavailable* and concerns variables that are uncontrollable, subject to *rapid change*, and *available only from sources outside the firm*. The fact is that marketing decisions, more so than any other business function, rely on information from the external environment as well as from current and prospective customers, competitors, government regulators, channel members, and the like. Outside forces include deregulation and the economic environment, which have fostered increased competitiveness in banking; professional and medical services; and the communications and transportation industries. The energy crisis spurred manufacturing of small, fuel-efficient autos, increased catalogue shopping and other forms of non-store retailing, and benefitted producers of insulation and energy

*A criterion is a rule or principle for evaluating something. When making decisions, the principle question usually is, How well does the alternative meet our objectives? Consequently, we will often use the words *criterion* and *objective* interchangeably.

[4]R. D. Hisrich and M. Peters, *Marketing Decisions for New Products* (Columbus, Ohio: Charles E. Merrill, 1984), pp. 168–169.