

# Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

## LAPTOP: A PRINCIPLES OF MARKETING SIMULATION

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### ABSTRACT

LAPTOP is a microcomputer based simulation game designed for use in the principles of marketing course. It is intended to provide a complement to the traditional lecture and textbook approach to this course. LAPTOP aims for a niche between highly specialized and highly comprehensive games. Some features include an environment drawn from real-world scenarios and data, qualitative as well as quantitative decisions, marketing concept and theory material integrated into the student manual, and a high degree of user-friendliness for both administrator and student.

### OVERVIEW

A brief overview and description of LAPTOP will be provided as well as a review of LAPTOP's role in the marketing principles course.

#### Objective

LAPTOP is a new simulation game designed to facilitate the teaching and learning of principles of marketing. Its niche is between highly specialized marketing simulations that focus on a single or very few strategy decision areas (Frazer, 1975; Frazer, 1977; Fisk and Fisk, 1986; and DeLozier, Lewison and Woodside, 1979) and highly involved and involving comprehensive games that serve as the primary vehicle of marketing strategy or management courses (Faria, Nulsen and Roussos, 1984; Larreche and Gatignon, 1977). LAPTOP is intended to complement the use of lectures, readings, films and other activities that are normally undertaken in an introductory marketing course.

LAPTOP addresses the major marketing strategy decision areas of a business firm. Conceptual content of the Student Manual, as well as the decision making in the simulation competition, focus on the formulation of the firm's marketing mix. In keeping with most introductory textbooks, the discussion is built around the framework of the four P's. Students must consider the relationship between each element of the marketing mix as well as the interplay of competitive strategies and environmental variables. Interactive relationships or synergistic effects are incorporated into the simulation model.

Along with the typical quantitative decisions found in most marketing games (such as product prices, advertising dollars, etc.), LAPTOP incorporates several qualitative decisions. These include, among other things, the determination of an advertising message (e.g., benefits, comparison, service) and the building of a sales promotional program (e.g., point of purchase material, trade shows, contests).

In keeping with its target audience and niche, the specific game decisions require that consideration be given to basic marketing principles. At the same time, however, consideration must be given to the formulation of an overall marketing program and the contribution of each decision to that program. Again, this represents a middle ground

between specialized and comprehensive games.

#### Modus Operandi

LAPTOP is designed for use on a personal computer rather than a mainframe. The advantages of personal computers over mainframes, though hardly conclusive, have been described elsewhere (Roussos, 1985, p. 5). These include the freedom from dealing with a distant computer center and the benefits of an interactive mode (such as immediate input review and editing, ease of parameterizing, facilitating trial runs, etc.). The LAPTOP program makes use of both interactive and batch functions.

The LAPTOP competitive environment is also interactive in that companies compete against one another (a la Bush and Brobst, 1979; Ness and Day, 1984; and Lewis, Lewis, and Boyle, 1985), rather than single companies competing against a computer model (a la Galloway, Evans and Berman, 1985; and Smith, 1985). Among other steps, then, the administrator gathers company decision forms and enters the decision information into the computer. Decisions are analyzed in a batch mode and an ASCII results disk file (Teach, 1986) is created and available for printing as well as analysis by canned programs (Sherrell, Russ and Burns, 1986).

#### Principles Theory

Learning can be conceptualized as a two-stage process, acquisition and application. Traditional teaching methods emphasize the acquisition phase. Simulation games, by their nature, are most directly intended for use at the application phase. A complete learning experience requires both acquisition and application.

A "Catch-22" of using simulation games in an introductory course is that games are intended to facilitate learning by providing an experiential exercise in decision-making. At the same time, by the nature of introductory courses, students are presumably being exposed to the fundamental principles of the subject area for the first time. As such, they may not yet be in a position to meaningfully apply unfamiliar concepts. LAPTOP addresses this dilemma by incorporating into the Student Manual brief overviews of any new concepts, terms, or ideas presented. These blocks of information are identified graphically in the manual and may be referred to or not as deemed appropriate by the instructor or student.

Thus, even though a decision topic area may not yet have been dealt with in class, students are not left unaware of the basic considerations involved in making each decision. For example, the students may have to develop an advertising budget for their companies in the competition before reaching this topic in the course lectures or textbook. The Student Manual, when describing the advertising decision area of the LAPTOP competition, presents some background information on developing promotional plans, methods of establishing advertising decisions. It is also recommended to the students that they examine the advertising chapters of

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their textbook for more detail. This format is true for all other decision areas as well.

This process not only provides the basic information that the students require to make their simulation decisions at the appropriate time, but also makes the lecture and textbook material more meaningful to them when these topics are reached in class.

### GAME STRUCTURE

The nature of the LAPTOP simulation in use will be described in the following sections.

#### Industries, Products, and Companies

The generic LAPTOP company is a manufacturer of laptop computers. The decision areas in the competition are almost exclusively of a marketing nature. The direct customers of each company are specialty computer stores and general merchandise stores. Small levels of sales are also achieved direct to business users.

The product mix of each company consists of laptop computers available in two models, standard and deluxe. The companies may compete in either or both of two geographic territories. The territories are of significantly different sales potential and demographic characteristics. As customer response to the marketing variables that the students have at their disposal differs in each territory, a unique marketing mix offering is necessary. The territories represent groups of real midwestern states with characteristics drawn from published government and private data sources (as described in the Student Manual).

The student teams take over an ongoing company. A narrative and financial history, along with current organizational structure for each company, is provided. Each decision of the student teams represents one quarter (three months) of business operation. A game may continue for an indefinite number of periods.

LAPTOP can directly accommodate a maximum of ten industries of two to six companies each (or a maximum total of 60 companies) on a two floppy diskette computer system. On a one floppy, one hard disk system, LAPTOP can accommodate up to 52 industries of two to six companies each or a maximum total of 312 companies. Additional industries can be accommodated by using additional floppy diskettes or multiple hard disk directories. As such, LAPTOP can accommodate any class size.

#### Decisions

A LAPTOP decision period comprises a total of 48 specific decisions reflecting decision areas of eleven different types. These may be described in terms of the following six overall categories.

- Price - A price must be established for each of two separate products in two separate geographic territories.
- Advertising - A budget must be established for broadcast, print and trade advertising; an advertising message must be selected; a sales promotion program must be developed (for each product and territory); and a cooperative advertising

- allowance must be set.
- Product - A research and development program for each product must be established.
- Place - A sales forecast and shipment schedule must be developed for each product in each territory.
- Sales Force - Size of sales force in each territory must be established; a sales force salary level must be determined; and a sales commission rate set.
- Market Research - A total of twelve market research reports available to the companies each period.

No explicit restrictions, other than nonnegativity, are placed on the ranges of decisions. Drastic strategy changes from period to period, however, are in several instances less effective than moderate changes.

A special feature of LAPTOP not generally found in other marketing simulation games is the inclusion of qualitative decisions beyond simple dollar budget amounts or the use of artificial and arbitrary indexes. These include the specification of an advertising message for each product and region as well as the development of a sales promotional program. In addition, a sales force morale indicator is reported for each company to reflect the present level of satisfaction of each company's sales force. Should salespeople become dissatisfied over a period of time, they are more likely to resign. Companies are, of course, informed of resignations and likely must incur the necessary hiring and training expenses to replenish their sales force size. This results in loss of continuity of market coverage and time lags in the company's effectiveness in cultivating a territory. Hence, students must learn to keep their salespeople reasonably satisfied.

#### Demand Model

Initial demand determination is based on a nonlinear compensatory industry model featuring variable diminishing marginal returns and a similarly specified company model (Pray and Gold, 1982). The two initial models (industry and company) differ in some respects, including lower elasticities in the industry model, an apparently common and necessary characteristic in comparable simulations (Pray and Gold, 1982; Pray and Gold, 1984). Thus, industry demand does not expand as rapidly as company demand. This means that as companies expand/improve their marketing activities, industry demand does not expand enough to satisfy the implied separate company demand increases. The result is that companies must draw market share from each other, thus intensifying competition.

The LAPTOP model is dynamic in that it incorporates several time lags reflecting carry-over effects. This has obvious implications for long range planning and strategy consistency over time. This also serves to minimize the unrealistic large market share swings from period to period found in some games.

The parameters of the basic demand model vary for each product-market combination. This necessitates the development of unique marketing programs for each product and market. The parameter file is easily adjusted by the LAPTOP user. Thus industry competition can be varied within a class, from class to class, and from semester to semester.

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Demand as determined initially by the basic model is subject to several interaction relationships. The effect of one strategy decision depends on the status of a second (or several other) decision variables. For instance, the effect of the use of a particular promotional theme, such as price, is dependent on whether, in fact, a company offers a relative price advantage in the marketplace. Such interaction effects encourage student consideration of the whole of a marketing strategy rather than simply its separate components. Most of the interaction effects are programmed in a heuristic fashion rather than being included in the basic demand equations, a convenient and flexible approach, but apparently not a common one (Gold and Pray, 1984).

It should be noted that, as discussed by Lambert (1980), the several interaction relationships serve to mitigate the anomalous behavior that is possible with a strictly compensatory model. In many instances in LAPTOP, an extreme decision variable, such as zero salespeople, cannot be compensated for by some other extreme value, such as a very low price.

Uncertainty in the form of a random component (Pray and Gold, 1982) is not an integral part of demand determination. While market demand is subject to small random fluctuations, company demand has no random element. Company performance is solely a function of company strategy. A degree of uncertainty is assured through the large and complex interplay of the many marketing mix elements. Goosen (1981) has addressed this issue of balancing the structure of mathematical functions, necessary for programming and pedagogical purposes, with the realism of uncertainty.

### Stockouts

The manner in which product stockouts are handled has been the focus of some exploration in the literature (Pray and Gold, 1984). LAPTOP basically adopts Pray and Gold's share normalization method (1984, p. 250). That algorithm specifies that a significant portion of demand not able to be satisfied due to stockouts, be allocated to competitors on the basis of their market shares as determined before available supply is reconciled with demand.

### Feedback

LAPTOP printouts for each company comprise a record of company decisions and status reports as to sales force trainees, resignations, and morale, product quality levels, unit inventories, etc. A current period itemized income statement--by--territory and in total--plus a company balance sheet are printed. And, as a measure of overall performance, the earnings per share--cumulative and latest period--of each company in an industry is indicated.

Companies may purchase up to twelve marketing research reports. Nine of these report the competing companies' strategy decisions for the latest period. In addition, an industry unit sales forecast, weighted (by actual unit sales) average prices, and unit sales market shares are available.

All told, printouts for each company are a minimum of two and a maximum of five pages, depending on the number of marketing research reports purchased.

LAPTOP instructor reports comprise, industry by industry, a record of companies' decisions and a summary of companies' performances. The latter consists of unit sales and market shares, dollar sales and

market shares, retained income, after tax earnings, and earnings per share, all on cumulative and latest period bases. These criteria are also presented for each of the four product-territory combinations.

### HARDWARE AND SOFTWARE REQUIREMENTS

LAPTOP requires standardly configured hardware. It is designed to run on IBM PC or IBM PC compatible personal computer systems. Minimum memory required is 128K RAN. The computer system may comprise either two floppy diskette drives or one floppy diskette and one hard disk drive.

Any standard printer may be used. However, in light of the large number of student companies the game is designed to handle, and the possibly sizable printouts, a dot matrix, laser, or other speedy printer is desirable. This factor, by the way, illustrates a compromise in the use of personal computers over mainframes. Mainframe line printers are typically much faster than personal computer printers and, further, some other party is charged with overseeing the printer.

Finally, in keeping with efforts for universally available support, the program is written in BASIC.

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