INTRODUCTION

Good decision making within the context of pricing strategy, in large part, requires the consideration of fairly large amounts of data and the evaluation of a range of alternatives. For students, managing this quantity of data frequently becomes such a highly complex task that they become confused and do not adequately analyze the variables involved. Also, for any problem, there generally is more than one viable solution. It is important that students inspect each alternative strategy and attempt to anticipate the impact of each on future operations. This is a sophisticated feat as well, typically involving tedious and complicated iterations and forecasts. In short, the great majority of marketing students have not developed the skills nor have the time needed for these complex operations.

To help alleviate this situation, the author has developed a computer-assisted instructional program consisting of a variety of microcomputer based modules within an integrated spreadsheet as pedagogical tools in the teaching of topics within the functional area of pricing strategy. These topical modules were developed to assist the undergraduate marketing student in understanding concepts, issues, and problems in establishing prices for goods and/or services that are: 1) appealing to customers; 2) competitive with similar business firms, and 3) which allow for sufficient profit. This paper describes the purposes, underpinnings, and benefits of the use of the modules to both student participants and the instructor who use this computer assisted instructional technique.

Deficiencies in Teaching Pricing Strategy Skills

The major objective in designing this computer assisted instructional spreadsheet was to facilitate the overall level of student understanding of pricing concepts. This objective arose because it has been observed that in spite of diligent efforts to explain the various pricing concepts and techniques, many students were unable to correctly apply them on exams and in case studies; and faculty who taught the marketing management and strategies courses were indicating to the instructors of the basic marketing course that the students were not understanding concepts, issues, and problems in establishing prices for goods and/or services that are: 1) appealing to customers; 2) competitive with similar business firms, and 3) which allow for sufficient profit. This paper describes the purposes, underpinnings, and benefits of the use of the modules to both student participants and the instructor who use this computer assisted instructional technique.

Need for a Synthesis: Toward the Development of A Spreadsheet Model

Therefore, students need criteria and guidelines which they can apply to any group of options that would enable them to build toward the most efficacious pricing decision. The typical current classroom situation has not adequately prepared the student in this topical area. However, there exists a methodology that can be employed to improve the student’s skills in this area. It is the purpose of this paper to show you this methodology in a step-by-step process which can be adopted to various teaching contexts.

We are aided greatly in this task by a pedagogical approach that appears to offer a new dimension to the educational process - computer-assisted instruction -using the microcomputer and a software program such as the revolutionary spreadsheet. The microcomputer can plow through the complicated and time-consuming analytical activities quickly, easily and correctly. In fact, with the help of the computer the student can begin to inspect a wide range of alternatives and the implications of large amounts of data almost instantaneously. By exploring these “what-ifs,” the student can predict the impact of the various choices without having to tediously go through the actual activities.

The author has developed a spreadsheet model LhdL begins to take into consideration those essential factors necessary in building pricing strategy skills. The model is a computer program that helps students to analyze, evaluate and communicate the many numeric and subjective variables that are part of making pricing decisions. It is a model for evaluating a group of alternatives with the goal of choosing one for action. The spreadsheet model will enable the student to choose the mode that best suits the situation. And, it does the time-consuming work correctly translating the students evaluations into numbers and percentages used for calculating the results.

This spreadsheet model also offers the student the possibility of changing his mind about the importance of various criteria and effecting an instant recalculation of the results. For example, in deciding if a new manufacturing facility should be built for company’s new product, a student might perceive he gave too much weight to the criterion of labor and not enough to the criterion of return on investment. A few quick changes to the spreadsheet model would give a revised result. This flexibility enables one to change assumptions many times with a quick view of the results.

Perhaps equally important, if not most important, with a spreadsheet model the student can see how he is making his decisions - which criteria and guidelines most strongly influence the alternative results.

THE SPREADSHEET MODEL

In teaching pricing strategies, there is no one absolutely correct formula to use in determining the best price. All pricing methodologies are subject to question and none have proven acceptable to all business situations. Therefore, it is necessary that
students obtain an understanding of the various methodologies available, and under what circumstances they may be used in setting an appropriate price. A feature of the spreadsheet model is to present many of the more frequently used approaches to pricing in a series of computer assisted instructional modules. Each module contains the following elements:

1. The lesson to be taught. This is where the computer does the actual “teaching.” It teaches a specific pricing skill or concept. The “teaching” mode describes the pricing technique (why, when, and how it’s used); gives the appropriate formula utilized, and presents an example of how the technique is used.

2. An application worksheet. This mode permits the student to apply the pricing technique.

PRICE ANALYSIS Application System Overview

There are three pricing technique modules in the PRICE ANALYSIS system, as well as an introduction module. The four modules are:

INTRO The introduction module will familiarize the user with the structure and operations of the PRICE ANALYSIS applications system. It also presents background information for a continuing example of an application in order to demonstrate the various pricing techniques.

COST This module presents 1) cost-plus pricing, 2) standard mark-up pricing, and 3) traditional breakeven analysis.

DEMAND This module presents 1) the concept of price elasticity of demand, 2) demand-backward pricing, 3) chain-markup pricing, and 4) modified break-even analysis.

PROFIT This module presents 1) target profit pricing, 2) target return-on-sales, and 3) target return-on-investment.

All of the program modules have a library of macros to automate the functions of moving: 1) from one module to another, 2) around each module, and 3) managing the spreadsheet functions of quitting and saving files.

How to Begin Execution of a Module

If you have a two-drive floppy-disk microcomputer, put the spreadsheet program disk (Lotus 1-2-3 or VP Planner) in the A drive and the PRICE ANALYSIS Application Systems disk in drive B. The first program that should be run is the INTRO module. To run this module, type/fr INTRO [enter]. If these instructions do not conform to your spreadsheet commands, follow the instructions for retrieving a file in drive B for your particular spreadsheet. From INTRO you can select any of the modules by using the following macro commands:

[Alt]C To run COST
[Alt]D To run DEMAND
[Alt]P To run PROFIT

AN EXAMPLE OF THE “COST” MODULE

The following displays a sample of one of the modules,
Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

For example, if a retailer pays $3,350 for a Whirlwind scooter and needs a 40 percent mark-up to cover 72 selling costs and profits, the final selling price would be...

Traditional Break-Even Analysis

Traditional break-even analysis examines the relationship among costs, revenues, and profits. It determines the sales quantity in units or dollars that is necessary for total revenues (price * units sold) to equal total costs (fixed and variable) at a given price. When the sales exceed the break-even quantity, the firm earns a profit. When sales are less than the break-even quantity, the firm loses money. The break-even point can be computed in terms of units or sales dollars:

To illustrate, assume management is considering a selling price of $2,950 to retailers for their whirlwind scooter. The total fixed costs defines the key concepts needed in this analysis.

Note that several important cost relationships can be drawn from the table:

1. Total fixed costs remain constant over the entire range of production. Average fixed costs fall as the quantity produced increases, because overhead costs are spread over more units.
2. Total variable costs rise over the entire range of production. Average costs remain constant per unit produced.
3. Total costs rise over the entire production range, since total fixed costs are constant and total variable costs increase. Average total costs decline, because average fixed drop and average fixed costs are constant, as production grows.
4. The marginal costs of producing additional scooters are $2,600 (average variable costs) over the entire range of production, because fixed costs are constant throughout.

Benefits

The basic benefit of this teaching procedure is that the student is encouraged to develop a more comprehensive understanding of pricing strategy with a variety of scenarios than was feasible when the work was done without computer and spreadsheet software.

A second benefit is that the student is encouraged to develop a basic familiarity and skill in the use of a spreadsheet in preparation for a professional career that will follow.

Benefits accruing to the instructor include covering a variety of pricing decision concepts and techniques with a minimum of class time, and provides practical examples of applications of pricing strategy techniques.

SUMMARY

The computer-assisted instructional spreadsheet modeling system presented in this paper is a relatively new approach continuously under development and revision. It is early to gauge its effectiveness at this time. During the upcoming months it will be...
Although PRICE ANALYSIS represents only an initial attempt at building pricing strategy skills through the use of spreadsheet modeling, modifications can be made which will make the exercise more realistic. These could include the addition of other variables and other pricing models. However, this computer-assisted instructional program should provide the marketing student with considerably more than just the basics of pricing strategy.

EXHIBIT 1
COMPUTER APPLICATIONS EVALUATION

To help evaluate the use of computer applications in this course, would you please circle the number that mostly represents your degree of agreement to disagreement to the statements below:

<table>
<thead>
<tr>
<th>1) The computer exercises helped me to understand the basic principles of pricing strategy</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2) The computer exercises took more time than they were worth</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3) The computer exercises added a lot of realism to the class</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4) The computer exercises were more entertaining than they were educational</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5) Performance in the computer exercises is a good way for a student to tell how well he/she is learning the subject</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6) Using computer exercises is an inefficient way to study a subject</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7) The computer exercises helped me to develop my analytical and decision making skills</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8) The computer exercises were rather confusing and hard to understand when I first began</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9) I enjoyed working with the computer</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10) The computer exercises have provided a good illustration of the usefulness of computers to solve problems</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11) The computer exercises have helped me to better understand how decisions should be made</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12) The computer exercises have been a valuable educational tool</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>13) Compared to the typical &quot;case&quot;, the computer exercises are more interesting</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>14) We should keep the computer exercises in this course</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Which computer exercises, if any, did you feel were not worth your time solving? (CHECK ALL THAT APPLY)

- Cost plus pricing
- Standard markup pricing
- Traditional breakeven analysis
- Price elasticity of demand
- Demand-backward pricing
- Chain-markup pricing
- Modified breakeven analysis
- Target profit pricing
- Target return on sales
- Target return on investment

Explain why.