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TOMED: A COMPUTER GAME EMPHASIZING SOCIAL RESPONSIBILITY /OR/ WHY THE POP-TOP CAN?

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ABSTRACT

There are many products such as the pull-off pop-top that are marketed without regard to their impact on society. In the case of the Pop-top, it is assumed that most readers can recall mysteriously locating such an item under foot even in the most secluded sections of the environment. One of the salient features of the Pop-top is the long lasting material from which it is constructed. Of course, this remarkable property of Pop-tops could also enable someone in the twenty-second century to extricate blood from a lower extremity. This leads one to imagine how clever the businesspeople are who developed and marketed the pop-top pull-off tab. The thrust of this study will be an attempt to enlighten young minds of such potential adverse social situations before they (students) are in the decision making positions in industry.

INTRODUCTION

Many traditional business courses emphasize quantitative techniques, examples follow, the simplex method of linear programming, Bayesian analysis, Maximin (WALD), Minimax Regret (SAVAGE), decision trees and the decision tools promulgated by Laplace, Hurwicz and others 42) These quantitative techniques calculate the best payoff, in terms of expected profit and toss, for the business entity. Pew of these techniques, however, fail to incorporate the social dimensions in the final calculations. This paper does not endorse changing the existing structure of the quantitative methods courses in universities to include a Social responsibility factor in each equation.

This paper does suggest for those business courses which have an application orientation, rather than the highly theoretical or principles type courses, to offer to students a quantitative problem, case, experiential exercise, or computer simulation with a definite social implication.

The application type of business course which will illustrate TOMED, a computer simulation described later in-this paper, is a Product Strategy class.

The associated quantitative problem is the selection of a new product to be marketed nationwide from five potential products currently in the research and development stage.

The primary purpose of this paper, therefore, is to provide an environment in which students are able to experience the social consequences of their decisions on business problems. The method to be utilized to accomplish this purpose will be to have students participate in a computer simulation game.

THE COMPUTER SIMULATION

TOMED is played for one hour on computer terminals by individual students. The computer program is written in Fortran and then executed under the NOS subsystem on a CDC Cyber 171.

The pregame instructions given to the students follow.

> You are the president of TOMED Corporation, a large company with many employees, stockholders, and diversified products. The Research and Development (R D) department has proposed five new products of which only one will be included in the product mix of TOMED. All the products required the same investment of time, people, and money.

> Your responsibility as the chief executive officer is to select which product will be marketed on a nationwide "Rollout" campaign.

> A brief summary of each product's attributes follow. Do not consult with any of your classmates on this decision. Part of this learning exercise is to experience the isolation of the chief executive. ("It's lonely at the top. ")

After the instructions, students play the game on the terminals. The game starts with preliminary information on how to key input requests. This will enable students to receive the detailed analysis for each new product.

To concentrate on the main issues, an abbreviated form for each of the five product scenarios follow. Probability calculations of profit potentials and quantitative factors have been omitted.

Alpha is a financially risky electronic product. Although the overall expected return is not high, there is a chance for a high profit. Conversely, there is also a chance for a high loss. Most students should observe that these two situations will eventually cancel each other out. The expected long-term result will be approximately a zero profit amount.

Beta is the most unglamorous product on the market. It's simply boring. Due to a government contract, however, it offers a stable long-term investment. This is the product the students should select.

Chichi is a children's toy with a good long-run profit potential and has passed all the government safety tests. However, one of the engineers just wrote to the president of TOMED, a memo stating, that the old model of chichi was mistakenly tested.' The dilemma concerns the new model. Although the new model is very similar to the old, it will require 6 months to retest. Will some students market the new model and not retest the safety of this children's toy?

Delta is a new type of pop-top for cans and returnable bottles with the best short and long-run profit potential of the five proposed products. To open the container, Product Delta is pulled off from the top of the container. Delta is made of a space age alloy that will last 10 times longer than the old type pop-top.

The major advantages of this product are: (1) Delta costs half as much as the old type pop-top to produce and (2) Delta can be used on both returnable and nonreturnable bottles, as well as aluminum cans.

A large can corporation representing a major soft drink company has already made a written offer for TOMED to exclusively supply them for seven years with Delta tops. Will some students want this huge contract or will they recognize the affect of Delta on the environment in the future years?

Echo, electronic coded hologram optics, is a new technological breakthrough but can Only be sold to the Japanese. The Japanese are the only manufacturers of an expensive complete home video entertainment system. The product is so unique, that probably every American home will own such a system in the next five years. The product could make some money for TOMED but would drastically increase America's balance of payments deficit. (Potential sales = 90 million imported units into the United States.)

A flowchart of the computer simulation game, TOMED, is illustrated in Figure 1. The pretest will only be used the first time the game is to be played. This will be explained later in the "comparison" section of the flowchart.

The game starts by randomly assigning each player to one of four groups. The randomizing technique utilized is internal to the CDC system.. It uses the clock time to initialize the first seed for the random number generator.

Each of the four groups: regular, research, profit, and social has an equal probability of being selected. Each group receives distinct instructions. The regular group just plays the game. The research group receives a fictitious frequency of the way students in the past have selected one of the products to be marketed. The profit group is told the primary objective of the TOMED Corporation is to make money and that a student's performance in the game will be evaluated on how much money they make. The social group is told as president of TOMED they have a large social responsibility to the people in the U.S. and that they should select a product carefully. Students receive information as to what group they belong to via the print function which outputs the data. Students, however, are not informed about the existence of the four distinctive group structures. They are just playing TOMED without knowing about the randomizing procedure. The computer simulation is cognizant and routinely keeps a record of each group's responses by storing the results in a separate file.

The next phase of the game is to have the players receive the five product scenarios. The students then decide what product is selected. Their decisions are stored on a file.

After the computer simulation portion of the TOMED game is completed, a debriefing is scheduled for the next class meeting. At this meeting the five product scenarios are analyzed with the game administrator noting the reasons why the one product should have been selected and the other four products not have been selected. During this discussion, the students are informed about the four random groupings and how each particular group had its own distinct information designed to influence which product was selected. Students are reminded of the various pressures and stress situations they will encounter as decision makers. The emphasis of the entire debriefing focuses in on the fact that today's students are tomorrow's decision makers. Therefore, students must be aware that there **is** more to decision making than the end result of some quantitative technique's expected profit potential.

In the final part of the debriefing, a handout is given to the students which lists "the major social responsibility areas in which business can become involved." These areas are illustrated in Figure 2.
(1) Students are asked to examine the various areas presented in Figure 2 and give examples and rationale of past products marketed, but were not in the best interests of society.

The pretest and comparison parts are really incidental to this paper. The intention of these parts was to determine if a person's attitudes toward politics would influence their choice of products selected. The unscientific method utilized was a pretest (3, pp. 79-160) the first day of class. The test was designed to calculate whether a person is a conservative, moderate, or liberal. The results of this comparison are in the results section.

RESULTS

The summarized results of sixty-six students playing the TOMED game are presented in Table 1. Before the start of the game it was planned to have approximately 16-17 in each of the four groups, but the randomizing procedure selected this particular distribution of 21, 7, 24, 14. The two groupings, research and social, are the experimental groups. (It should be remembered that the research group influences students toward the Chichi selection, while the social group influences toward the selection of Beta.)

The results of Table 1 indicate the overwhelming selection of Delta by the students. Delta was the pop-top product which offered the largest expected profit.
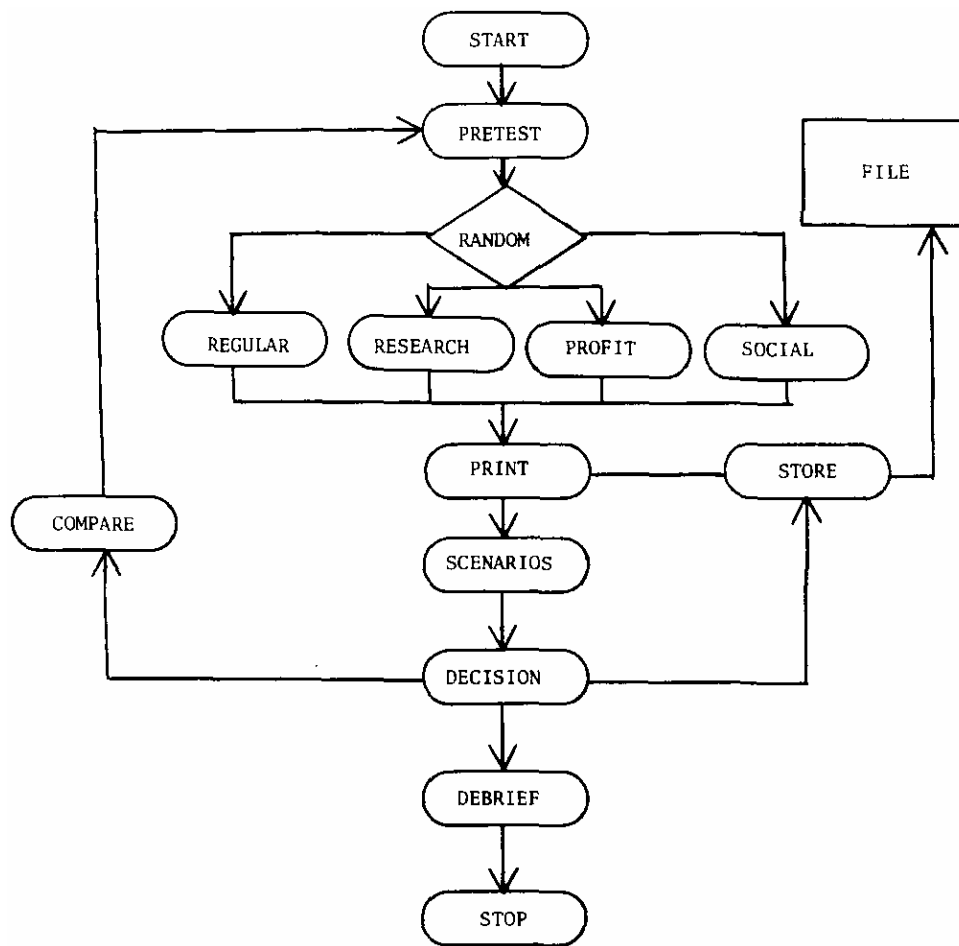
The results of the one-time experiment, concerning the pretest (liberal, moderate, conservative) and the comparison are presented in Table 2. The results of these 45 students playing the game are very Similar to the previous table with most people selecting Delta.

The debriefing part became the real strength of the results section. Some students were actually astonished to learn that an alternative could be selected that did not offer the highest expected profit payout. Most students expressed enlightenment during the debriefing class. Therefore, the students playing the TOMED game were generally affected in a positive manner and should be more perceptive of the areas of social responsibility in decision making.

DISCUSSION

This paper has shown it is possible to incorporate a learning technique with a social emphasis, TOMED, when teaching a course which includes quantitative decision making.

FIGURE 1

FLOWCHART OF THE TOMED SIMULATION

FIGURE 2
MAJOR SOCIAL RESPONSIBILITY AREA IN WHICH
BUSINESS CAN BECOME INVOLVED

PRODUCT LINE

Internal standards for product
*Quality e.g., does it last?
*Safety, e.g., can it harm users or children finding it?
*Disposal, e.g., is it biodegradable?
*Design, e.g., will its use of even "easy" misuse cause
  pain, injury, or death?

Average product life comparisons versus
*Competition
*Substitute products
*Internal standards or state-of-the-art regular built-in
  obsolescence

Product performance
*Efficacy, e.g., does it do what it is supposed to do?
*Guarantees/warranties, e.g., are guarantees sufficient,
  reasonable?
*Service policy
*Service availability
*Service pricing
*Utility

Packaging
*Environmental impact (degree of disposability;
  recycleability)
*Comparisons with competition (type and extent of
  packaging)

MARKETING PRACTICES

Sales practices
*Legal standards

*"Undue" pressure (a qualitative judgment)

Credit practices against legal standards

Accuracy of advertising claims--specific government
  complaints

Consumer complaints about marketing practices
*Clear explanation of credit terms
*Clear explanation of purchase price
*Complaint answering policy
 --Answered at all
 --Investigated carefully
 --Grievances redressed (and cost)
 --Remedial action to prevent future occurrences

Adequate consumer information on
*Product use, e.g., dosage, duration of use, etc.
*Product misuse

Fair pricing
*Between countries
*Between states
*Between locations

Packaging

ENVIRONMENTAL CONTROL

Measurable pollution resulting from
*Acquisition of raw materials
*production processes
*Products
*Transportation of intermediate and finished products

Violations of government (federal, state, and local) standards

Cost estimates to correct current deficiencies

Extent to which various plants exceed current legal
  standards, e.g., particular matter discharged

Resources devoted to pollution control
*Capital expenditures (absolute and percent)
*R D investments
*Personnel involved full-time; part-time
*Organizational "strength" of personnel involved

Competitive company performance, e.g., capital
  expenditures

Effort to monitor new standards as proposed

Programs to keep employees alert to spills and other
  pollution-related accidents

Procedures for evaluating environmental impact of new
  packages or products

EXTERNAL RELATIONS

Community Development

Support of minority and community enterprises through
*Purchasing
*Subcontracting

Investment practices

*Ensuring equal opportunity before locating new
  facilities
*identifying opportunities to serve community needs
  through business expansion (e.g., housing
  rehabilitation or teaching machines)
*Funds in minority banks

Government Relations

Specific input to public policy through research and analysis

Participation and development of business/government
  programs

Political contributions

Disclosure of Information/Communications

Extent of public disclosure of performance by activity category

Measure of employee understanding of programs such as:
    *Pay and benefits
    *Equal opportunity policies and programs
    *Position on major economic or political issues (as appropriate)

Relations/communications with constituencies such as stockholders, fund managers, major customers, and so on

International

Comparisons of policy and performance between countries and versus local standards

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TABLE 1
PRODUCT SELECTION BY RANDOM GROUPING

	Regular	Research	Profit	Social	Total
Alpha	0	0	0	0	0
Beta	2	0	2	0	4
Chichi	0	1	1	6	8
Delta	17	5	16	6	44
Echo	2	1	5	2	10
Total	21	7	24	14	66

TABLE 2
PRODUCT SELECTION BY POLITICAL ATTITUDE

	Liberal	Moderate	Conservative
Alpha	0	0	0
Beta	1	3	0
Chichi	1	2	1
Delta	8	19	8
Echo	0	1	1
Total	10	25	10