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## INTRODUCING THE MARKETING CHANNEL LABORATORY

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### ABSTRACT

The Marketing Channels Laboratory is a marketing channels simulation designed to be run on microcomputers. The simulation contains a data entry program which enables the student teams to enter their decisions directly into the computer.

### INTRODUCTION

As you can tell from the title, this is a subfunctional area simulation dealing with the channel aspect of marketing. Marketing channel operations tend to be somewhat difficult for students to understand because most students have never had the opportunity to see a channel in operation. When one takes a field trip to one or more members of a marketing channel, only a portion of channel operations is visible and the dynamics of the channel are not readily evident. Even though one spends a great deal of time in the classroom discussing channel dynamics, students do not fully grasp the conflict and pressures that exist within marketing channels.

Simulations dealing with the marketing discipline provide very little insight into the nature of channels. Most simply acknowledge the existence of channels and focus upon the other variables of the marketing mix (see 2,5,6). This tends to give short shrift to an area which is the least known to the student. Several simulations have been developed which focus primarily upon marketing channels. Several of these are noncomputerized and thus lack some of the complexities which can be designed into a computer simulation. The Marketing Channel Laboratory is based upon a noncomputerized channel simulation developed by Burns [1]. It has also benefited from some of the work done by Gentry and Pickett (4). The Marketing Channel Laboratory is designed to provide the student with a working knowledge of marketing channels and how they function. This is accomplished in a simulated environment which provides a laboratory for the marketing instructor to use in a channels course. The simulation makes the channel come alive by creating the pressures and conflict similar to those which exist in a real marketing channel.

The Marketing Channel Laboratory is different from most other simulations in that most of the action takes place outside of the computer. The students playing the simulation are assigned to teams which operate firms; this is similar to the procedure used by other simulations. However, in the Marketing Channel Laboratory simulation there is a great deal of overt interaction among the teams which one does not find in most other simulations. The teams represent firms at different levels of the channel, specifically retailers, wholesalers and manufacturers. Each of the firms negotiates with firms at the other levels for the purpose of providing sufficient stock to satisfy the demands of the consumers while making a profit. The computer plays no part in the agreements reached. It is used to record the agreements after they have been consummated. In this sense, the computer acts as the accountant for each of the simulated firms. It keeps track of all the revenues generated and expenses incurred by each firm and it provides reports of each firm's operations. The computer also generates the demand for the product based upon the marketing actions taken by the members of the channel as well as upon last period's sales.

The firms are free to form vertical linkages if they so desire, or the channel may remain a traditional fragmented channel depending upon the desires of the channel members. The channel members are free to act as they see fit so long as their action does not violate the law. Firms which do violate the law are subject to administrative hearings and may be subject to significant fines.

The competition is directly between firms rather than between firms via the computer as in most educational simulations. This provides an advantage in that the students can directly see this competition and tend to think of the competition as being between themselves and other firms rather than between themselves and the computer. A channel simulation lends itself to this approach because the firms in a channel interact in an overt manner among themselves and not simply with the computer.

As the focus of this simulation is upon marketing channels, the variables of interest deal with the movement of goods through the channel. The product sold in this simulation is microcomputers. The firms at each level of the channel negotiate with firms at other levels to buy and sell microcomputers for the purpose of making a profit. Volume of goods sold or purchased, prices terms of sale, transportation costs, and the level of participation in cooperative advertising programs are all variables which are open for negotiation.

The floor for price tends to be the production costs of the two manufacturers in the simulation. The cost of production varies depending upon the size of the manufacturer's production facility and the volume of goods produced. Each firm in the channel is responsible for establishing a price that will move product while still remaining competitive in the channel. The sale can be made for cash, or credit may be extended for 30, 60, or 90 days. The volume of the sale becomes important in determining the transportation costs

for the shipment. Transportation costs are based upon distance shipped and volume shipped. Transportation costs may be paid by either of the participants in the negotiation, or the transportation costs may be shared on an agreed upon ratio among the two firms. The firms have the option of engaging in cooperative advertising which requires them to agree upon the amount each of the firms will contribute toward the promotion effort. In addition, each of the firms may decide to advertise on a noncooperative basis.

The cost of operations of a firm depends upon its facility size and volume of throughput. Larger facilities handle large volumes of throughput more efficiently than smaller facilities. Conversely, it is inefficient to field a large facility with a small volume of throughput. Any firm may contract to enlarge its facility. The construction period takes three months. If a firm finds that it has built too large a facility, it may decrease the facility size by selling part of it. However, the selling price will be less than the construction cost.

Each firm is responsible for managing its finances in a profitable manner. If a firm encounters a cash flow problem, a short term loan will automatically be arranged at a "reasonable" high interest rate. The roan will run for one month with the loan automatically being repaid at the end of the month if cash is available. If cash flow problems continue, a new loan will be taken out for the shortfall with part of the proceeds being used to discharge the previous month's loan.

The major problem the firms face is controlling inventory. This of course is not significantly different from a number of other simulations. Insufficient inventory results in lost sales. Sales that are lost will be filled by foreign competitors. A surplus of inventory will result in an excess of inventory charges. Thus each firm must learn to forecast demand accurately. This becomes quite difficult because all firms except the manufacturers are dependent upon other firms for their supply of microcomputers. A firm is not allowed to sell more computers than it has in stock. If a firm oversells its inventory, the decrease in shipments below what was ordered is shared by all buyers equally.

DECISION ENTRY

Once decisions are made, the firms must enter their decisions into the computer which for the most part consists of recording their agreements with other firms. The decision entry program is similar to the one described by the author in an earlier paper (3c. The firm must have access to a microcomputer and the disk containing its decisions.

In order to enter the decision, the firm must first type RUN DECIDE. This loads and runs the decision entry program. The firm will be asked to identify itself as being a manufacturer, Ml or M2, a wholesaler, WI, W2 or W3, or a retailer, RI, R2, R3, R4 or R5. Then it is asked whether it has entered a decision this semester. If the answer is yes, the program reads the previous decision. If the answer is no, the decision values are set to zero prior to any data entry. The firm is next asked whether it would like to look at its decision. If the response is yes, a menu for the four pages containing the decision is listed as shown in Figure 1. It should be noted that there are only three pages for the retailers as they do not sell to themselves.

If Page 1 is selected, the sales made to retailers are listed. It should be noted that for every variable there is both a variable number and a variable value. The variable number is used to reference the variable value. The variable values are stored in an array. The variable number references the array location where the variable value is stored. For example, the volume of product P1 sold to R2 is referenced by the variable number 34 (see Figure 1). The actual value of variable number 34 is shown as the number at the intersection of the row following P2 and the column R2. The "sales to retailers" page indicates the volume of sales a wholesaler or manufacturer sold to one of the five retailers. It also shows the price of the transaction and the terms of sale. The example in Figure 1 indicates the retailer agreed to pay $700 for each microcomputer. The microcomputers were to be paid for in 30 days.

Figure 2 shows Page 2 of the decision. It includes purchases or sales made from or to wholesalers and/or manufacturers. The variable values are of the same type as shown in Figure 1. It should be noted that a manufacturer can sell only one product, the one it produces. Thus Ml sells P1 and M2 sells P2. Wholesalers and retailers can sell either P1 or P2.

(Insert Figure 2 about here.)

Shared promotion and transportation variables are shown in Figure 3. The shared promotion values represent the amount of money the firm has agreed to spend on shared promotion with another firm for product P1 or P2. For example, in Figure 3 firm M2 agrees to spend $10,000 as its portion of a shared promotion agreement with retailer W1. The variable value of $10,000 is entered for variable number 68 on Page 3. The transportation entries on Page 3 represent the percentage of the transportation costs which the firm has agreed to cover. In this case, the manufacturer has agreed to pay 70 percent of the cost of transporting the goods to W1.

FIGURE 1

```
]RUN
ENTER YOUR FIRM'S IDENTIFICATION (E,G, M1,W2,R4)?M2
HAS YOUR TEAM ENTERED A DECISION THIS SEMESTER (Y OR N)??Y
DO YOU WISH TO LOOK AT YOUR DECISION FILE (Y OR N)??Y
YOUR DECISION IS DIVIDED INTO FOUR PAGES.
        1 - SALES TO RETAILERS
        2 - SALES TO/PURCHASES FROM MFGRS. AND WHOLESALERS
        3 - SHARED PROMOTION AND TRANSPORTATION
        4 - ADVERTISING, FACILITY SIZE, SCHEDULED PRODUCTION
        ENTER NUMBER OF PAGE DESIRED OR 'E'?l
THE FOLLOWING DECISION VALUES ARE CURRENTLY IN PAGE 1
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|      | (31) | (34) | *(37)* | (40) | (43) |
|------|------|------|--------|------|------|
|      | (32) | (35) | (38)   | (41) | (44) |
|      | (33) | (36) | (36)   | (42) | (45) |

| FIRM  | R1 | R2 | R3 | R4 | R5 |
|-------|----|----|----|----|----|
| P1    | 0  | 0  | 0  | 0  | 0  |
| PRICE | 0  | 0  | 0  | 0  | 0  |
| TERMS | 0  | 0  | 0  | 0  | 0  |

|      | (46) | (49) | (52) | (55) | (58) |
|------|------|------|------|------|------|
|      | (47) | (50) | (53) | (56) | (59) |
|      | (48) | (51) | (54) | (57) | (60) |

| FIRM  | R1 | R2  | R3 | R4 | R5 |
|-------|----|-----|----|----|----|
| P2    | 0  | 500 | 0  | 0  | 0  |
| PRICE | 0  | 700 | 0  | 0  | 0  |
| TERMS | 0  | 30  | 0  | 0  | 0  |

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PRESS ANY KEY TO CONTINUE
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FIGURE 2

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    1 - SALES TO RETAILERS
    2 - SALES TO/PURCHASES FROM MFGRS. AND WHOLESALERS
    3 - SHARED PROMOTION AND TRANSPORTATION
    4 - ADVERTISING, FACILITY SIZE, SCHEDULED PRODUCTION
    ENTER NUMBER OF PAGE DESIRED OR 'E'?2
THE FOLLOWING DECISION VALUES ARE CURRENTLY IN PAGE 2
```

|      | (1) | (4) | (7) | (10) | (13) |
|------|-----|-----|-----|------|------|
|      | (2) | (5) | (8) | (11) | (14) |
|      | (3) | (6) | (9) | (12) | (15) |

| FIRM  | M1 | M2 | W1 | W2 | W3 |
|-------|----|----|----|----|----|
| P1    | 0  | 0  | 0  | 0  | 0  |
| PRICE | 0  | 0  | 0  | 0  | 0  |
| TERMS | 0  | 0  | 0  | 0  | 0  |

|      | (16) | (19) | (22) | (25) | (28) |
|------|------|------|------|------|------|
|      | (17) | (20) | (23) | (26) | (29) |
|      | (18) | (21) | (24) | (27) | (30) |

| FIRM  | M1 | M2 | W1 | W2   | W3   |
|-------|----|----|----|------|------|
| P2    | 0  | 0  | 0  | 2000 | 2000 |
| PRICE | 0  | 0  | 0  | 450  | 450  |
| TERMS | 0  | 0  | 0  | 30   | 30   |

```
PRESS ANY KEY TO CONTINUE
```

FIGURE 3

1 - SALES TO RETAILERS
2 - SALES TO/PURCHASES FROM MFGRS. AND WHOLESALERS
3 - SHARED PROMOTION AND TRANSPORTATION
4 - ADVERTISING, FACILITY SIZE, SCHEDULED PRODUCTION
ENTER NUMBER OF PAGE DESIRED OR 'E'?3
THE FOLLOWING DECISION VALUES ARE CURRENTLY IN PAGE 3

|  | (61) | (64) | (67) | (70) | (73) |
|--|--|--|--|--|--|
|  | (62) | (65) | (68) | (71) | (74) |
|  | (63) | (66) | (6?) | (72) | (75) |

| FIRM | Ml | M2 | W1 | W2 | W3 |
|--|--|--|--|--|--|
| P1 | 0 | 0 | 0 | 0 | 0 |
| P2 | 0 | 0 | 0 | 0 | 0 |
| TRANS | 0 | 0 | 0 | 70 | 70 |

|  | (76) | (79) | (82) | (85) | (88) |
|--|--|--|--|--|--|
|  | (77) | (80) | (83) | (86) | (89) |
|  | (78) | (81) | (84) | (87) | (90) |

| FIRM | R1 | R2 | R3 | R4 | R5 |
|--|--|--|--|--|--|
| P1 | 0 | 0 | 0 | 0 | 0 |
| P2 | 0 | 0 | 10000 | 0 | 0 |
| TRANS | 0 | 0 | 50 | 0 | 0 |

PRESS ANY KEY TO CONTINUE

FIGURE 4

1 - SALES TO RETAILERS
2 - SALES TO/PURCHASES FROM MFGRS. AND WHOLESALERS
3 - SHARED PROMOTION AND TRANSPORTATION
4 - ADVERTISING, FACILITY SIZE, SCHEDULED PRODUCTION
ENTER NUMBER OF PAGE DESIRED OR 'E'?4
THE FOLLOWING DECISION VALUES ~RE CURRENTLY IN PAGE 4

|  | (91) | (93) | (94) |
|--|--|--|--|
|  | (92) |  | (95) |

|  | ADV EXP | FAC SIZE | SCHED PROD |
|--|--|--|--|
| P1 | 0 | 0 | 0 |
| P2 | 100000 |  | 6000 |

PRESS ANY KEY TO CONTINUE
1 - SALES TO RETAILERS
2 - SALES TO/PURCHASES FROM MFGRS. AND WHOLESALERS
3 - SHARED PROMOTION AND TRANSPORTATION
4 - F~DVERTISING, FACILITY SIZE, SCHEDULED PRODUCTION
ENTER NUMBER OF PF~GE DESIRED OR 'E'2E
DO YOU WISH TO CHANGE DECISION VALUES (Y OR N)?

?

Page 4, shown in Figure 4, changes depending upon whether the firm is a manufacturer, a wholesaler or a retailer. All firms record decisions regarding the amount spent on noncooperative advertising. If a decision is made to alter a firm's facility size, it is entered here. A reduction in the facility size is indicated by a minus figure. For manufacturers, the volume of goods to be produced is entered on this page as either variable number 94 or 95. For retailers, the retail price is set using these variables. Wholesalers do not have a variable 94 or 95 on their Page 4.

If a firm desires to alter its decision, which is usually done each period, it should respond with Y when asked whether it wishes to change decision values. The program then responds with: "How many values do you wish to change?" The number of values the firm wants to alter is then entered. The program responds with instructions to enter the variable number and then the variable value for each variable which the firm wishes to update. After the firm has entered all of its changes, it gets a chance to change additional values or to examine the revised decision values if it so desires. It is strongly recommended that the firm review its changes prior to terminating the program. This provides an opportunity to discover and correct errors in

data entry prior to any damage being done. When the firm is satisfied that the decision currently in the computer is as desired, the firm indicates that it does not wish to make any more changes and the program writes the current decision to disk. The firm is provided with a message that its decision has been updated which indicates the decision is stored safely on disk.

The Marketing Channel Laboratory is run at a time specified by the instructor. Each firm is responsible for inputing its current decision prior to the designated time. If a decision is not recorded on time, the previous period's decision is run. To run the simulation, the instructor types RUN CHANNEL. The simulation is loaded and run with the simulation providing messages informing the instructor what it is doing at each stage of the run. After the simulated has been initialized, the instructor is asked to provide the current date. This date will be printed on the output for the teams. The instructor is then asked for the period number. If period one is entered, additional variables will be initialized. If any other period is entered, the history from the past period's operation is loaded. Later in the simulation processing, the instructor is asked whether hard copy printout is desired. If so, which will be the case when actual play is taking place, the instructor is requested to turn the printer on. The output for the teams is printed which includes an income statement and balance sheet for each firm, the status of a firm's facility size, and a record of purchases made if the firm is a wholesaler or retailer. An example of the printout for a wholesaler is shown in Figure 5. Finally an instructor's summary is printed which provides data for the instructor to track the progress of the firms.

### AVAILABILITY

The simulation is currently developed to run on an Apple 11/11+ or an Apple IIe. Current plans are to adapt the simulation to the CP/M operating system and then to create versions for the IBM PC and for the Radio Shack computers. It has undergone field tests during the past fall and hopefully will be available from the publisher in time for next fall's classes.

Running a simulation on a microcomputer has several advantages compared to a mainframe. The simulation does not have to be adapted to a local operating system. When one receives a copy of the program on disk, the program will run simply by loading and executing the program. The simulation is much more portable in that a microcomputer can be carried to any location desired and the simulation

is ready to run. As microcomputers are becoming readily available in most universities, the decision was made to develop the simulation for the microcomputers which appear to be the most popular in higher education.

FIGURE 5

INCOME STATEMENT FOR FIRM M2
FOR PERIOD 1      6 JANUARY 1984

-SALES-

| CUSTOMER | PROD | UNITS | PRICE | TOTAL |
|---|---|---|---|---|
| W2 | P2 | 2000 | 450 | 900000 |
| W3 | P2 | 2000 | 450 | 900000 |
| TOTAL REVENUE | | | | 1800000 |
| COST OF GOODS SOLD | | | | 1200000 |
| NET REVENUE | | | | 600000 |

-EXPENSES-

| | | |
|---|---|---|
| MARKETING COSTS | | 1000 |
| OVERHEAD | | 30000 |
| TRANSPORT COST | | |
| W2 | 2000 UNITS | 2799 |
| W3 | 2000 UNITS | 2799 |
| NONSHARED PROMOTION | | 100000 |
| SHARED PROMOTION | | 10000 |
| INTEREST | | 0 |
| INVENTORY COSTS | | 28000 |
| PENALTY COSTS | | 0 |
| TOTAL EXPENSES | | 174598 |
| PROFIT BEFORE TAXES | | 425402 |
| TAXES | | 212701 |
| PROFIT AFTER TAXES | | 212701 |

BALANCE SHEET AS OF PERIOD 1

-ASSETS-

| | | |
|---|---|---|
| CASH | | 1000 |
| ACCOUNTS RECEIVABLE | | |
| W2—30 DAYS | 900000 | |
| W3—30 DAYS | 900000 | |
| R2—30 DAYS | 350000 | |
| TOTAL | | 2150000 |
| INVENTORY | | |
| 1000 UNITS—P2 300/UNIT | | 300000 |
| 6000 UNITS—P2 320/UNIT | | 1920000 |
| FACILITY | | 6000000 |
| TOTAL ASSETS | | 10371000 |

—EQUITIES—

| | |
|---|---|
| BANK LOAN | 2558299 |
| TAX CREDIT | 0 |
| CAPITOL STOCK | 6000000 |
| RETAINED EARNING | 1812701 |
| TOTAL EQUITIES | 10371000 |

YOUR FACILITY SIZE FOR THE NEXT PERIOD IS
30 THOUSAND SQUARE FEET

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[2] Faria, A. J., R. 0. Nulsen, and J. L. Woznick, <u>Compete: A Dynamic Marketing Simulation</u>, Revised Edition, (Dallas: Business Publications, Inc., 1979).

[3] Fritzsche, David J., "A Data Entry and Retrieval System for a Computer Simulation (DERS)," <u>Insights into Experiential Pedagogy</u>, Proceedings of the Sixth National ABSEL Conference, New Orleans, 1979, pp. 291—294.

[4] Gentry, James W. and Gregory M. Pickett, "A Review of Channels Exercises and the Description of a New Alternative," <u>Developments in Business Simulation & Experiential Exercises</u>, Volume 9, Proceedings of the Ninth National ABSEL Conference, Phoenix, 1982, pp. 117-119.

[5] Hinkle, Charles L. and Russel C. Koza, <u>Marketing Dynamics: Decision and Control</u>, (New York: McGraw-Hill, 1975).

[6] Ness, Thomas E. and Ralph L. Day, <u>Marketing in Action: A Decision Game</u>, 4th ed. (Homewood: Richard D. Irwin, 1978).