

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

THE GENERATION AND APPLICATION OF EVALUATION CRITERIA FOR MANAGEMENT POLICY AND STRATEGY SIMULATION GAMES

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ABSTRACT

The use of computer simulations as a methodology for college teaching has become widespread. A new generation of sophisticated and innovative classroom exercises that imitate real situations has been spurred by technological developments. Such simulations have found applications in such diverse fields as history, medicine, law, and business administration.

Accompanying the application of simulations in business administration courses are a variety of methodological questions, including the choice of level of difficulty, simulation content, form of team or group composition, mechanics of simulation operation, integration of the simulation with the remainder of the course content, and course emphasis on the simulation.

This paper will consist of a review of these methodological issues, a summary of the appropriate applications of simulations in one particular course, Business Policy and Strategy, critique of various simulation games, and a sharing of experiences from authors, teachers, and students at various educational levels.

EVALUATION CRITERIA

The decision by a trainer or teacher to utilize a Management Policy and Strategy Simulation (MPSS) game in a training or academic setting can be arrived at in a variety of ways. Dissatisfaction with the traditional case/lecture method, based upon perceived ineffectiveness or tiredness with this methodology, can be one rationale. Reports of positive experiences by colleagues, journal articles researching this methodology, previous experience as a student, departmental policy, and/or the desire to experiment can be other supportive reasons.

Whatever the means by which this decision was reached, the decision-maker faces a number of alternatives to choose from. Simulations such as The Multinational Management Game(1), STRATSIM(2), The Executive Game(3), The Executive Simulation(4), The Management Game(s), and Tempomatic IV(6) are six of the possible choices which exist. Without spending a large amount of time to read, understand, and evaluate each possibility, the trainer or teacher is faced with the possibility of making a choice which is suboptimal or unsuitable for his/her situation. The objective of the present paper is to present a set of evaluation criteria for MPSS games which the authors have developed and found to be useful, and to compare and contrast, on these criteria, the six simulations mentioned above.

In order to compare and contrast MPSS games, a review of various sources was undertaken in order to assess the construct of the simulations. This review revealed that MPSS games primarily differ in the scenario presented, the types of functional decisions to be made, and the structure of the game. These criteria are summarized in Table 1, and briefly discussed below.

The scenario Includes the Industry in which the game is set, the products manufactured, the inclusion or exclusion of international sales markets, the broad economic indicators utilized, and the nature of demand curves for the product(s).

In the functional areas of Marketing, Manufacturing, Finance, and Administration, a wide degree of difference in emphasis and decision capability exists among MPSS games. In the Marketing area, the types and numbers of products, price setting capability, advertising, sales (including people, reimbursement, hiring, and training), market areas, seasonal variations, quality control, R&D, and delivery of merchandise are possible variants. Manufacturing decision variations often include plant capacity, raw material purchase, labor costs, engineering study, production schedule, the handling of over-time, plant expansion, new plants, depreciation and maintenance schedules, and cost of goods sold. Finally, in Finance and Administration, company organization, stock sale and purchase, dividends, accounts receivable and payable, notes payable, loans(planned and unplanned), bonds, reinvestment of funds, taxes, and administrative expenses are handled in entirely different manners by the various MPSS games.

The game structure consists of aspects such as the number of companies/teams which can be handled, the number of decisions to make, the number of products handled at the wholesale versus the retail level, whether the company is a new or existing company, the number of quarters or time periods for the game, the number and types of market reports available, and the number and form of output documents provided to the students. Additional concerns in this area include the capability of the instructor to change or modify the MPSS variables, the availability and usefulness of an instructor's manual, the ease or difficulty of bringing the game onto a computer center system, the ease or difficulty of assembling each quarter or time period's inputs, the handling of the new company carryover history generated with each quarter or time period, ease of debugging the inevitable errors which appear, the availability of auxiliary programs to extend or enrich the MPSS, and the clarity of the student manual for the game.

APPLICATION OF EVALUATION CRITERIA

In the presentation of this paper, a complete set of tables will be distributed to trace the application of the enumerated scenario, functional decisions, and game structure criteria to compare and contrast the six MPSS games previously listed. The inclusion of this information allows the decision-maker to, at a glance, trace the variations which can be encountered, and to select those constraints which outline the limitations of a particular MPSS application. On the attached Tables 2, 3, and 4, the economy and industry of each game is reviewed, the richness and weaknesses of each game's functional applications are summarized, the use of decision tools are specified, and comments on the MPSS manual itself are detailed as examples of the kind of analyses which can be generated from these criteria. For example, if the instructor wishes to utilize a MPSS which has a strong Marketing and Production orientation, STRATSIM offers this combination, at the expense of a weak financial orientation. The Business Management Laboratory appears to be the most complex of the MPSS

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games surveyed, indicating a preferable choice in a graduate or executive training situation. There is some variance in the use of Accounting ratios as decision tools, and more emphasis placed on other tools by The Executive Simulation and The Multinational Management Game. In reviewing the participant's manual for each of the games, while they are all rated as good or better, The Business Management Laboratory has some features which make it the highest rated in this category. The discussion of this information and the more detailed information included in the full set of Tables will be the major points addressed in the presentation of the paper.

REFERENCES

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TABLE 1
COMPARISON AND CONTRAST CRITERIA

- A. Flipchart of Comparison
 - I. The Economy: The Scenario
 - II. types of Decisions
 - a. Marketing
 1. Types and numbers of products
 2. Price setting
 3. Advertising
 4. Sales: people, reimbursement, hiring, training
 5. Market area
 6. Seasonal variations
 7. Quality control, existing product
 8. R & D Product development-new products
 9. Delivery of merchandise
 - b. Manufacturing
 1. Capacity
 2. Raw material
 3. Labor costs
 4. Engineering (process) study
 5. Production schedule
 6. Overtime
 7. Plant expansion (existing plant)
 8. New Plants
 9. Depreciation and maintenance
 10. Cost of goods sold

- c. Finance and Administration
 1. Organization Vertical/Horizontal Centralized/Decentralized
 2. Stock sale and purchase
 3. Dividends
 4. Accounts receivable
 5. Accounts payable, notes payable
 6. Loans; planned, unplanned
 7. Bonds
 8. Reinvestments of funds
 9. Taxes
 10. Administrative expenses

- III. Game Structure
 - a. number companies/teams
 - b. number decisions to make enumerated? Y/N number forms, how grouped/categorized
 - c. number products wholesale vs. retail defined? Y/N
 - d. Existing vs. New Company (past financial info Y/N, how much)
 - e. Length of game
 - f. Market reports available? Y/N what kinds
- B. Evaluation Table
 - I. Richness/Complexity
 - a. Marketing
 - b. Production/Manufacturing
 - c. Finance
 - II. Decision Tools
 - a. Use of standard accounting ratios, instruction in use of
 - b. Other decision tools
 - III. Manual organization
 - a. Format
 - b. Content detail
 - IV. Ease of reading and/or reference

TABLE 2: EVALUATION TABLE - THE ECONOMY AND INDUSTRY

CRITERIA	STRATSIM	TEMPORATIC	RUS. INT. LAB	EXEC. SIM.	MULTI-NAT'L	THE EXEC. GAME
The Economy and Industry	starts from zero	two years' past history	1 year past history	starts from zero	1-yr. history (or Team) starts from zero for others	starts from zero
	Mfgn. pens & assoc. writing instruments	Mfgn. small appliance-like product "Tempomatic"	Mfgn. stainless steel flatware & cookware	Product not defined	Two products undefined	1 product - undefined
	domestically-based	domestically-based	domestically-based	domestically-based	internationally-based	domestically-based
	Sell to wholesalers & large retail chains	not distinguished	sell to retailers & wholesalers (imm. effect on market)	consumer goods mkt. - finished Industrial goods mkt. - unfinished	sell to retailers & wholesalers	
	Market (macro) size & share calculated	forecasted sales & potentials (qtrs. 9-12)				
	Econ. index 3 qtrs. forecast	BWI (Business Week Index) shows deviations from forecasts	Economic index Next qtr. > forecast Next year > forecast	Economic index forecast for 3 qtrs.	Economic index forecast for 3 qtrs. National trend	Econ. index seasonal index price index
	Inelasticity & elasticity of demand as effect on Market share	Economic index no forecast				
	Demand for product		Can choose name of company - can draft by-laws & other corporate papers			

TABLE 3: EVALUATION TABLE - FUNCTIONAL AREAS

CRITERIA	STRATEGY	TECHNICAL	BUS. MGT. LAB	EXEC. SIMUL.	MULTI-RAT'L	THE EXEC. GAME
Functional Area						
Marketing	1. Most products 2. Hiring salespeople weak 3. Seasonal variations on products 4. CPU & R&D good, delayed 5. Elasticity of dem. excellent	1. One product 2. Hiring personnel detailed 3. Advertising local & national 4. Quality control lump sum	1. Very diversified 2. Most detailed hiring personnel 3. Advertising by product, by area 4. Quality control divided between 2 products	1. Name author generally name format 1. Two products 2. Hiring personnel name 3. Can transfer products to & from dist. centers	1. One product generally fairly weak 1. Two products 2. Hiring personnel name 3. Can transfer products to & from dist. centers	1. One product generally fairly weak 1. Two products 2. Hiring personnel name 3. Can transfer products to & from dist. centers
Production/ Mfg.	1. Weak on raw m. purchase, labor costs 2. Strike possibility 3. Learning curve excellent 4. Can dump inventories 5. Calculating cost of goods sold?	1. Very detailed except for lack of D & E studies	1. Most detailed of all 6 games	1. Production specified on input card 2. Plant expansion & reduction possible 3. Transfers from dist. center to dist. center can add dimension to nature of goods	1. Production specified on input card 2. Plant expansion & reduction possible 3. Transfers from dist. center to dist. center can add dimension to nature of goods	1. Very detailed additional material given in calculation of production, guidelines (Ch. 5) 1. Very weak compared to other games
Finance	1. No discussion of A/R, A/P 2. Reinvesting funds only thru stock recall 3. Taxes? 4. MSI, SRI, ESV excellent 5. Unplanned loans only	1. Very detailed in most areas of comp'n 2. No overall rating scheme as in STRATSIM	1. Most detailed in most areas of comp'n 2. No overall rating scheme as in STRATSIM	1. No A/R, A/P 2. Stock repurchase only 3. Tax formulae given 4. No overall rating scheme 5. Planned & unplanned loans	1. No A/R, A/P 2. Stock repurchase only 3. Tax formulae given 4. No overall rating scheme 5. Planned & unplanned loans	1. No A/R, A/P 2. Stock repurchase only 3. Tax formulae given 4. No overall rating scheme 5. Planned & unplanned loans

TABLE 4: EVALUATION TABLE - DECISION TOOLS, MANUAL, AND EASE OF READING

CRITERIA	STRATSIM	TECHNOMATIC	BUS. MGT. LAB	EXEC. SIMUL.	MULTI-NAT'L	THE EXEC. CASE
Decision Tools Accounting Ratios	ROI		ROI	ROI	ROI	-----
	ROI		ROI			
Other tools	Earnings per share	EPS	EPS Debt/Share			
	DEP	Past operating curves	Learning curve (not as detailed as STRATSIM'S)	Supplementary readings very good	(No supplementary readings)	Ch. 4 Step-by-Step decision procedure
	Learning curves	Decision check sheet		Sales forecasting Prod'n scheduling Operating Budget Cash Budget	Worksheets & Procedures	Ch. 5 Modelings & Analysis on all phases excellent
	MSI, SRI, ESV				Many extras pp. 69-81	
Manual Format	Table of contents	fair	table of contents excellent	table of contents OK	table of contents excellent	table of contents poorly organized; very detailed
	Well laid out	well laid out	well laid out	well laid out	well laid out	badly laid out
Content detail	satisfactory	good summary sheet of conditions, game rules	excellent summary sheet of conditions	fair	fair	good but poorly organized
	good/good	good/good	good/excellent	good/good	good/good	poor/poor
Ease of reading and/or reference	Print-type very good	Print-type good	Print-type good			