

**THE BUSINESS POLICY GAME: AN INTERNATIONAL SIMULATION-AN
ASSESSMENT TOOL**

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ABSTRACT

The Business Policy Game: An International Simulation was designed to provide an integrative experience for students studying business administration and to provide a vehicle around which to design and implement strategic plans. Tyhe game incorporates two types of assessment tools. The measures evaluate knowledge based upon performance in a simulated environment. This paper discusses some of The Business Policy Game's features and then focuses upon the use of the outcome measures as assessment tools

The Simulation

The Business Policy Game, now in its 4th edition and 24th yhear of publication, is a total enterprise management simulation. It is computer based with versions available to run on both IBM compatible and Macintosh computers. The game is designed as a generic game and thus does not focus upon a specific product or industry. This allows administrators to select a product of their choice or simply to refer to the product as units.

The Business Policy Game materials include an administrator's manual, a player's manual, an administrator's program and a player's program. Both programs are used when decision sets are entered on disk or into a network file. Only the administrators program is used when the administrator enters decisions centrally. In order to provide users with convenient access to the latest versions of the programs, copies of the most recent versions are kept on two ftp sites which

users may access by contacting the authors. Users need only to check one of the ftp sites at the beginning of the academic term the simulation is used to make sure they are running the latest version. If a newer version is on the ftp site, it can be downloaded and installed in minutes.

Game Structure

Participants in The Business Policy Game are organized into a series of competing teams. Each team normally consists of from four to six people. Teams are grouped into worlds of three to eight teams each. Multiple worlds are easy to handle; each world simply requires one run of the simulation. It should be noted that teams compete within a world, but there is not competition between worlds.

The game requires each team to make a series of decisions for each quarter of simulated operations. The decisions involve various aspects of finance, marketing and operations. Each team creates a decision set which is entered into the computer in one of several ways. The administrator can use the central decision entry option and enter all decision into the computer. This is the least desirable option in our opinion. Each team can enter its decision set on disk and then submit the disks to the administrator. The disks will be read by the administrator's program when the simulation is run. Alternatively, the game can be installed on a network with each team entering its decision set into a file on the network. The files will then be accessed by the administrator's program when the simulation is run. The decision entry module

in both the administrator's and the player's program checks decisions for valid entries as the decisions are entered. Entries which do not follow the rules of the game are not accepted and must be changed prior to exiting the program module. The decision entry module contains context sensitive help so that the user can easily determine the game rules for the entry being made.

After the game has been run, a series of report files for each team is created. The files may be viewed on a monitor and/or printed by the game administrator. The files may also be transferred to floppy disk or to team accounts on a network. Each team may view the files and/or print the files out individually. In addition either the administrator or each team individually may use a program module to graph a series of variables which show comparative team performance within the world on a yearly or quarterly basis. A series of short vignettes is also available which the game administrator may select from to create an additional report. When the administrator selects a vignette, the program automatically creates a file, which is transferred to the player's disk or account on the network when the other report files are transferred. The vignettes may be used for class discussion focusing upon game issues.

Game Environment

The Business Policy Game contains two economic environments; the first, Merica, resembles the United States. The second, Sereno, represents a generic Latin American environment. Each environment has its own economic growth pattern and inflation rate. Funds are transferred between the two areas utilizing the current exchange rate. The two economic environments are based upon real data disguised through indexing to protect the innocent. The economic environments may be altered by selecting a new starting point in the

series of economic data provided with the simulation. This changes all of the economic data and reindexes the data to the new starting position. The process keeps the relationships between the two countries parallel and thus maintains a realistic economic environment.

Each simulated firm begins the simulation with a production plant in one of three Merica market areas. There are no plants initially located in Sereno so all goods sold must be shipped from the Merica plant. Each firm has a sales office in the three Merica market areas and in Sereno. Each sales office is responsible for maintaining inventory levels in the area plus managing the area's sales force. A firm may build a plant in another market area, expand an existing plant or close a plant if more than one plant is currently operating. A firm may stop selling in an area by closing the sales office in the area. This can be done even while an operating production plant is located in the area. A sales office may be reestablished in the area at a later date if desired. When a plant or sales office is closed, the physical facility is sold to a developer with the proceeds credited to the firm.

Inventory must be managed at two levels In the simulation. A firm manages total inventory available by maintaining sufficient productive capacity and scheduling that capacity to meet customer demand. Capacity is increased by expanding plant capacity and capacity is decreased by short-term layoffs of employees on a production line or deactivating a production line Inventory in a specific market area is controlled via sales office orders. Orders are filled from inventory available at production plants. Inventory at a production plant is not available for sale in another market area unless the sales office in that area has placed an order for the inventory. Thus it is possible to stock out of inventory in a market area even though excess inventory exists at a production plant. Of course, if sufficient production is not scheduled

in the manufacturing plants to fill all sales office orders, one or more sales offices will come up short.

Within each market area, the sales office may hire additional sales people, or fire sales people. It is also possible to transfer sales people between market areas. The sales office determines the pay rate for its sales people in terms of amount and mix of salary and commission. The sales office may also set the products price for the market area as well as the amount spent on advertising the product in the area. The model and quality level of the product sold is determined by the home office.

Finance decisions are centralized at the home office in Merica. Funding in excess of operating revenues may be obtained by selling stock and/or issuing bonds. Short-term funds may be obtained via bank loans. Bonds may be retired early and stock may be repurchased. Excess cash in the short term may be invested in CDs. A consistent dividend payment is normally considered a part of prudent financial management.

A series of work sheets and corresponding spreadsheet templates is provided for teams to utilize in their planing and operating activities. The financial spreadsheets are linked to eliminate the necessity of entering data multiple times.

The Business Policy Game as an Assessment Tool

As stated above, The Business Policy Game may be used for the purpose of assessing knowledge demonstrated through performance in a simulated business environment. The game is a complex, total enterprise simulation, which requires teams to utilize a variety of business skills. To successfully compete in the simulation, a team

must function as a cohesive unit. Team members must be well versed in the functional areas of business as well, as be able to create and implement a viable business strategy. Success depends upon the ability to integrate what has been learned in previous course work.

Performance is measured over a series of decisions which eliminates the luck factor and the good-day, bad-day syndrome associated with single measures of performance. The game is normally played over 16 to 20 quarters which requires a consistency of performance to do well. One poor quarter or one very good quarter will not affect the overall results to any extent. Success is demonstrated by a series well-thought-out decisions as the results of the current quarter build upon the results of previous quarters.

Two different scales are available to assess game performance in The Business Policy Game, with each one providing an updated score for each team every quarter. The first, referred to as the Z-Score Evaluation Report, yields a series of z-scores for each team at the end of each quarter of simulated play. Z-scores are calculated for seventeen different variables and may be used individually to assess team performance. An overall z score for each team is calculated also by applying weights to the z-scores of each of the seventeen variables. The weights may be altered by the administrator to tailor the assessment instrument to meet specific needs. The program contains a set of default weights, which are used unless the administrator desires different weights. The administrator's program may be used to specify custom weights for each of the seventeen variables. Thus performance assessment may be based upon a series of z-scores or upon one weighted z score.

A copy of the Z-Score report from an actual competition is shown in Table 1. The reader will note that there is a significant range in team performance. It should also be noted that the scores would change if the variable weights were altered. The Z-Score Evaluation Report can be used to assess the performance of teams with the administrator determining the type of performance being measured by altering the weights accordingly.

The second scale is the Pro-Score Report. It utilizes ten variables to calculate weighted totals for each team. For each variable, the top performing team is assigned a score of 1.00. The remaining teams are assigned scores, which represent the proportion of the top team's score that they have achieved. This provides a means of assessing team performance on each of the ten variables if desired.

The team scores for each of the ten variables are weighted to yield an overall team score which ranges from 0 to 1.00. As with the Z-Score Report, the individual variable weights can be altered to provide an overall assessment of the type of performance the administrator is seeking. The Pro-Score Report weights can also be specified separately for each team. Thus the administrator could vary the assessment by individual team. A copy of a Pro-Score Report from an actual competition is shown in Table 2.

Comments

The Business Policy Game provides an active measurement of knowledge by evaluating performance in a dynamic simulated environment. One advantage of using the simulation is that the measurement scales can be adjusted to measure the type of performance desired given that the performance is encompassed by the variables included in the scales.

Both the Z Score and Pro-Score Reports have been compared to evaluations completed by independent judges in a series of competitions.

While no statistical testing has been done, the relative position of the teams has been almost identical for the two reports and the business people serving as judges. This certainly provides some confidence in the validity of the measures.

Simulations as assessment tools provide the advantage of measuring dynamic performance rather than simply static knowledge. This characteristic also makes them superb pedagogical devices. The difficult decision is arriving at the proper criteria and criteria levels to use as hurdles.

Reference

Richard V. Cotter and David J. Fritzsche, *The Business Policy Game: An International Simulation*, Englewood Cliffs: Prentice Hall. 1995

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Table 1
Z-Score Evaluation Report

World 1 Z-Score Evaluation Summary Report
Year 7 Quarter 4 Business Policy Game, 4th Edition
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VARIABLE	Co. 1	Co. 2	Co. 3	Co. 4	Co. 5	Co. 6	
Net Income	-0.39	0.73	0.37	1.51	-1.59	-0.63	weight = 8
Total Sales	0.09	1.60	0.06	0.64	-1.48	-0.91	weight = 5
Market Share	-0.12	1.86	-0.67	0.27	-1.41	0.08	weight = 5
Total Equity	-0.38	0.31	1.40	0.66	-1.82	-0.17	weight = 5
Total Assets	0.13	0.55	0.46	0.49	-2.21	-0.59	weight = 4
Fixed Assets	0.44	-0.61	-1.04	-0.16	-0.62	1.98	weight = 3
Stock Price	-0.48	0.78	-0.89	1.82	-1.00	-0.23	weight = 8
Earnings Share	-0.31	0.53	-1.13	1.93	-0.75	-0.27	weight = 8
Dividends/Share	-0.71	0.84	-0.46	1.83	-0.98	-0.51	weight = 3
Sales/Assets	-0.64	0.66	0.35	1.68	-1.25	-0.80	weight = 7
Income/Assets	-0.01	1.67	-0.42	0.48	-0.05	-1.67	weight = 8
Income/Sales	-0.65	-0.08	0.58	1.48	-1.70	0.36	weight = 5
Income/Equity	-0.36	0.77	-0.80	1.81	-1.14	-0.28	weight = 7
Unit Prod Cost	-1.52	-0.39	0.75	0.94	0.30	1.42	weight = 5
Investor's Roi	-0.24	0.77	-1.28	1.78	-0.47	-0.56	weight = 8
Int Coverge	-0.67	-0.50	2.07	0.39	-0.60	-0.69	weight = 4
Bonds/Equity	-0.46	0.15	1.83	0.43	-1.39	-0.55	weight = 7
Average Scores	-0.37	0.57	-0.02	1.06	-1.07	-0.17	
Weighted Avg.	-0.38	0.64	-0.08	1.16	-1.04	-0.30	

Key: Company 1; Company 2, Company 3, Company 4, Company 5, Company 6

Table 2
Pro-Score Evaluation Report

World 1 Pro-score Evaluation Report
Year 7 Quarter 4 Business Policy Game, 4th Edition
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Performance measures	Co. 1	Co. 2	Co. 3	Co. 4	Co. 5	Co. 6
Total Assets	0.97	1.00	0.99	0.99	0.80	1.00
weight	10	10	10	10	10	10
Total Equity	0.79	0.87	1.00	0.91	0.62	0.82
weight	10	10	10	10	10	10
Dollar Sales	0.86	1.00	0.85	0.91	0.71	0.76
weight	10	10	10	10	10	10
Net Income	0.71	0.88	0.83	1.00	0.53	0.67
weight	10	10	10	10	10	10
Income/Equity	0.79	0.90	0.74	1.00	0.71	0.80
weight	10	10	10	10	10	10
Income/Sales	0.70	0.78	0.87	1.00	0.56	0.84
weight	10	10	10	10	10	10
Stock Price	0.49	0.77	0.40	1.00	0.38	0.55
weight	10	10	10	10	10	10
Earnings/Share	0.55	0.72	0.39	1.00	0.47	0.56
weight	10	10	10	10	10	10
Market Share	0.81	1.00	0.76	0.85	0.69	0.83
weight	10	10	10	10	10	10
Investor ROI	0.87	0.94	0.81	1.00	0.86	0.85
weight	10	10	10	10	10	10
Weighted Total	0.75	0.89	0.76	0.97	0.63	0.77

Key: Company 1, Company 2, Company 3, Company 4, Company 5, Company 6