

Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

PROFITS: THE FALSE PROPHET

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ABSTRACT

Historically, the profits generated during the course of play by companies in a business simulation have been used as a surrogate measure for the managerial ability of the team members. The author suggests that this view has severely limited the scope and design of business simulations. Better measures of managerial ability would be gained by measuring and analyzing errors in forecasting over a wide variety of events. The ability to operate within budget constraints and the ability to allocate limited resources among almost limitless needs are also indicators of managerial ability. Assigning specific responsibilities to each individual on a team and then evaluating that individual's effort, allows a grade or performance rating to be assigned to each member of the team. Measuring profit performance requires the limitation that all firms must start as equals. Without this imposing limitation a much richer simulation environment could be established.

INTRODUCTION

The vast majority of faculty who use business simulations in the classroom environment seem to evaluate a team's performance based on some function of the profit the simulated firm has accumulated over the period of play. This may be actual profit, return on equity, return on investment, stock price, inventory turns or even market share. At first glance this looks like the correct thing to do. After all, in the *real world*, the executives of firms are evaluated on their ability to generate profits. However, if one looks carefully at the evidence, there are far more counter examples negating this hypothesis than examples that support this hypothesis. Intercompany comparisons of executives and their managerial capabilities based on the profitability of, say, IBM and Digital Equipment Corporation or Coca-Cola USA and PepsiCo are hardly even considered. Yet intercompany comparisons are regularly used to evaluate the quality of the managerial decisions in business simulations. Scott and Strickland's instructor's manual for *Micromatic* recommends as much as 40% of a student's grade be assigned based on "performance" (Scott & Strickland 1985, page 6). Schellenberger & Masters' *MANSYM IV* produces an evaluation based on return on equity and measures of internal performance. The weight assigned to each factor is set by the instructor (Schellenberger and Masters 1986, pages 66-71). Evaluations using an instructor weighted machine scoring technique based on ROI, market share, financial ratios, etc. is provided by *The Business Game* (Mills and McDowell, 1985). All of these measures compare the performance of one firm on these variables directly to the performance of another firm.

At the 1986, annual ABSEL meeting, one session came to the conclusion that profits or their derivatives, were the best, if not the only valid criterion to evaluate business simulation performance. The use of profits was seen as making the competition between teams more like the real world. It was claimed that top managers are judged on their abilities to generate bottom line profits and students should face the same evaluation criterion in business simulations. There were, however, several in the audience with dissenting views. Not only was profit considered to be the best indicator of performance, the session concluded, but it is reported after every play for every team and thus, it is easy to find, the data provides direct measures of the rank order of performance and direct comparisons can be made among and between the competing teams.

This paper presents a different view. It is not that the bottom line profit figure is unimportant, but that the time period over which profits are accumulated in most business simulations is too short to provide an adequate measure of managerial ability. Determining

large portions of a student's grade based on short term profit measures emphasizes the view that management has a very short horizon. While this trait of evaluation based on short term measures of profitability may actually exist in the world of U. S. business, it is not one that should be fostered in the minds and habits of young managers. In addition, the utilization of profits as an evaluation tool creates too many obstacles and obstructions to realistic simulation design and play.

Many simulation authors stress that their games "...utilize general relationships that might exist in any competitive industry" (Edge, Keys and Remus, 1985, page 1). Other authors want to "...keep the environment relevant" (Jensen and Cherrington, 1984, page iv). Still another claims that, "Through simulation you will get as close to actual business experience--at the decision-making level--as you possibly can without leaving the classroom" (Bush and Brobst, 1979, page 1).

In spite of these claims, all of the above and the vast majority of other business simulation develop a scenario in which all firms are identically equal. Why are they all equal? If profits and other financial comparisons are used for evaluations, then no firm is allowed to have an advantage. This author has never found a situation where the executives of firms make decisions in an environment of total equality between companies. The use of direct comparisons of profits between simulated firms have produced some strange and counter productive decision making on the part of some teams. Desperation plays such as charging an astronomical price for a product and hoping to sell at least a few, is but one example. End-play, such as cutting all R&D or ordering no raw materials in the last period are other typical moves. All of these decisions create unrealistic results and suggest that decisions detrimental to the firm may be appropriate when a good evaluation of a team or manager is at stake.

Situations of decision making under conditions of total equality never exists in reality and tend to simplify simulations in a way that distracts and misguides decision makers. The goal should be on developing decision rules that can be generalized and applied in many new and different applications. Emphasizing short term and comparable profits detract from participants taking a long term view of the firm. The firm must survive and compete over many years, whether or not the current crop of managers remain with the firm. Producing short term profits at the expense of appropriate long term commitments have ruined many a firm in the real world, therefore, why set student managers on this very course.

Business schools have recently been criticized in both the business and popular presses because their graduates are too short sighted or are interested in their own progress at the expense of the firms that they manage. It has been stated that the Japanese are overtaking the U. S. because of a failure of managers to take the long run view. It is claimed that business school graduates in general and MBAs in particular look only for short term gains. They will not take long term gambles on new products or innovations because they receive promotions and pay raises based on short run successes. The emphasis is on sure bets. The hue and cry seems to be; If American industry is to prosper in the face of strong international competition, managers must stress strategic planning and look for long run successes not just short term profits and the personal acclaim that instant or sure success brings. Evaluating students who participate in business games on the basis of cumulative profits over a designated number of plays, typically eight to sixteen simulated periods, emphasizes the short term perspective and does not provide incentives for long term planning. All the players know how each team is doing according to reported profits. Frequently, professors even point out which teams are "*winning*" based on short term cumulative profits as an incentive

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for the student managers to do a better job and to “win this one for the Gipper”. This emphasis on short term profits is easily interpreted by students to be the best tool for evaluation, after all the professor emphasizes it. Thus, in evaluating business simulation results in the way that they do, the faculty provide the business school critics with their best ammunition.

Because business simulations are frequently evaluated on profits or profit derivatives, games have been designed to insure assets, liabilities, market potential and cost structures are equal across all firms at the start of the game. Substantial care is taken in simulation design in order not to give any company or team an advantage in producing profits, except for the assumed managerial ability of its team members. All ensuing profit differentials are then assumed to be the result of superior managerial decision making. Some times, profits have resulted solely because of luck. In some cases a firm has led the industry in profits until the end of the game and then seen their position evaporate due to *end-play* on the part of a competing team. In still other situations bad decisions on the part of one team affected the profits of other teams in unequal ways.

When has the condition of equality of opportunity and profitability ever been observed in the *real world*? In reality, some firms have more resources than others. Certainly a General Motors executive is not compared to one at American Motors on the basis of overall company profits. Some companies have lower labor costs and still others have location advantages. It is the task of managers to manage in spite of these differences and to do the most efficient job in the allocation of scarce resources to those uses that produce the most benefits for the firm. In pure economic terms, managers must allocate the firm's resources in a way that will equalize their marginal rates of return across all possible investments. Student managers in simulated environments should face these same realities and recognize their tasks as what they really are. On the job, they will almost never be asked to produce or be judged on their ability to produce the highest dollar profits of all the companies in an industry. Finns or plants are never equals. The confounding of fixed cost allocations, the ownership and operation of multiple strategic business units as well as firms with different product line widths, all make accurate company to company comparisons too unreliable upon which to base well thought out managerial evaluations. Differential advantages exist in all phases of manufacturing and marketing between competitors. Simulations should teach and students should learn how to recognize differential advantage and to put their resources where they will yield the most profitable return even if their alternatives are not as good as a competitor's opportunities. Students must learn how to get the most bang for their buck and not feel cheated if another manager has more opportunity to exploit their firm's particular advantages.

THE EXCESS BAGGAGE OF EVALUATION BY PROFITS

The inherent assumption of almost all business simulations that this author is acquainted with, is that some form of short term profits will be used as an evaluation tool. The lone exception to this case is Markstrat (Larreche and Gagnon, 1977). If this were not the case, then all firms would not start with identical financial resources, marketing potentials and manufacturing facilities. If one were to abandon this constraint, think of all the variations that could be incorporated in a business simulation. Firms high on innovation could compete with more traditional firms. Products in different stages of the product life cycle competing for the same customers could provide team members with a vast array of experiences. Firms with inherent manufacturing advantages could compete with firms that have marketing advantages. Different manufactures could have different experience curves and efficiencies of production. Some firms could be phasing old products out of the market place as other firms are introducing new and innovative ones to the market. The list of changes that would make gaming more realistic is almost endless.

The underlying pseudo requirement of using profitability as an evaluation tool also carries the necessity of starting all firms from an equal position. This equal opportunity necessity dooms simulations which are evaluated on the basis of profitability to

situations that are over simplistic and not reflective of reality.

Wouldn't it be nice to have a game where one firm had a new manufacturing facility with its higher technology and more efficient throughput, including the bugs that come from new technology, and a competing firm which had only antiquated equipment. Another firm in the same simulation could have higher transportation costs due to being located in a different geographical area but also have lower labor costs. The ability to incorporate these features under the equal opportunity assumption needed for basing the evaluation of teams accumulated profits is almost if not, impossible.

OTHER PROBLEMS WITH PROFITS

One of the tenets of proper evaluation methods is that the person or team being evaluated should be evaluated on the basis of controllable variables or the decisions they make and not on externalities (Landward & Farr, 1980, and O'Conner, Peters, et al, 1984). It is not infrequent in simulations that errors in decision making by one team affects the profitability of another team. One team may under or over price a product so much that every other firm in the industry have their profits affected. Some more than others. Another scenario that all faculty who use business simulation have faced, is where a particularly bad or erroneous decision has affected the profits of a firm for the entire time over which the simulation is played. While these or similar events may take place in the drama of real life, their occurrence in a game does not encourage the best efforts on the part of the participants or concentration on the best decision making processes in the simulated environment.

An additional problem of using profits as a means of evaluation and reward is that it is very difficult to assign a different grade to the different members of a team. Several schemes have been suggested by various simulation authors. Peer evaluations are suggested by Keys and Leftwich in The Executive Simulation (Keys and Leftwich, 1985, page 5). Dividing the net assets among the players by each team member is encouraged by Ness and Day in Marketing in Action Instructor's Manual (Ness and Day, 1984, page 10). Some authors even devise an elaborate system of converting “ending chips” into points which are allocated to the individual members as rewards for their efforts (Thavikulwat, 1983, page 34). Most of these methods can be summarized as ones in which each of the players parcels out the earnings of the simulated firm to every player in some proportion that relates to the effort that each member has contributed to the group. However, group cohesion, Greek organization membership, power plays and even outright prejudice can and do sway these allocations.

IF NOT PROFITS, WHAT CAN BE USED FOR EVALUATION

In order to operate all business simulations, the participants must forecast events, order materials and create budgets and pro forma financial statements. Since these are produced as working documents by the players, why not convert these into evaluation instruments? If one team is able to accurately forecast direct manufacturing costs, inventory levels, market shares and sales, along with the need for cash, it would be expected that their firm would be better managed than the firm of a team which was not as good at forecasting. Note that these measures do not require any equality of assets, efficiency and/or marketability of their products among the competing firms. Errors in forecasting and estimating could be measured in either absolute or in relative terms. If relative or percentage error measures are used, it must be recalled that they are not symmetrical. The lower bound is zero, negative errors are not defined, but no upper bound exists. The inclusion of measures based on errors in forecasting would direct students into looking for solutions by doing economic analysis at the margin, a skill one expects that business and economic students learn while in college.

Business simulations could be developed where budgeting would play a major role in the management of the enterprise. In these simulations the estimates and forecasts would provide the basis for establishing budgets for the operating divisions or departments. Errors in forecasting in these situations would have very detrimental affects on operations since the budgets are directly tied

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to the forecasts. If each member of the management team were evaluated on the basis of their individual accuracy, the negotiations between team members needed to revise budgets would add a great deal to both the complexity and the authenticity of business games.

Some Examples

The procedure of providing forecasts and estimates as a regular part of the decision making processes does not require a totally new generation of business simulations. If a game provides terminal or microcomputer input to a decision module, another set of interactive questions regarding forecasts and expected outcomes could be added to the decision input module. If paper decision forms are used, a few additional lines is all that needs to be added. The addition of forecasts and estimates do not alter or change the basic algorithms of the simulations. The only calculations which need to be added would be those to provide the differences between the actual performance of the firm, division or department and the forecasted values, estimated by the participants. Newer games could incorporate more involved procedures as they were developed.

Requiring participants to estimate sales in units and the expected market share of each product in the firm's product line provides an explicit tool for evaluation of the quality of the marketing decisions. The estimate of sales requires that the person responsible understand the interaction of those variables which determine a firm's sales. An estimate of the total market share requires an understanding of how the decisions of one firm affect the total industry demand of a product. This procedure of obtaining and evaluating forecasts requires that the participants consider how changes in both their and their competitors' marketing expenditures will affect their firm's sales as well as the total industry's sales. Dollars spent on advertising should be directly compared to estimates of how it will affect sales, both in the short term as well as in the long run.

Manufacturing is less dependant upon the competitive pressures from other firms, but manufacturing must still service marketing's need for products to sell. In manufacturing, estimates of the cost per unit produced, raw material inventories at the end of each period and, possibly, the amount of down time expected on the assembly line over each simulated time period could be required.

Top management or finance could provide estimates of cash flow and the expected cost of capital and interest rates and possibly establish budgets for marketing and manufacturing. Note that two important aspects of this procedure of forcing estimates from the participants exists. There is no requirement for equality of starting positions or of equal opportunity among firms. In addition, each team can be broken into its individual members or into subsets of players for evaluation as long as they are each assigned an identifiable task of providing forecasts or estimates pertinent to their area of responsibility. The assignment of participants to areas of responsibility could be rotated among the members of a team by the instructor or game administrator in order to provide a variety of experiences. Each such assignment could be evaluated. In addition, the individual evaluations could take place every decision period, lithe instructor wished, he or she could still evaluate the team as a whole based on some aggregation of errors across functions and allow the assignment of individuals to areas of responsibility to be made by the team itself.

CONCLUSIONS

The use of errors in forecasting as evaluation criteria for managerial decision making should improve the quality of decision making in business simulations. The only assumption that must be made is that better forecasting yields better decision making. It directs participants to closer examine the marginal results of decisions and lessens the tendencies to grope about for easy answers to complex problems. Small short term gains are not

preferred to larger but more stochastic long term gains. In addition, the use of error measurements frees simulations from the requirement that all firms must have equal assets, liabilities and opportunities. A more rich environment of differences between firms should provide more realism and direct decision making along more economically viable alternatives.

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