

# Using Par Players to Enhance Learning in Business Simulations

William D. Biggs  
Arcadia University  
biggs@arcadia.edu

## ABSTRACT

*This article describes the author's use of "par players" to enhance student learning in a general management simulation. The article builds upon the work of Wellington and Faria (1997). Recommendations for further research are provided.*

## INTRODUCTION

Even a casual reading of the ABSEL Proceedings, as found in the Bernie Keys Library (Smith, 2007), provides a clear indication that a major topic of interest is enhancing student learning through the use of business simulations. This interest can also be found in the proceedings of other organizations (NASAGA, ISAGA, SAGSET, etc), as well as, journal articles in a wide-variety of professional journals (*Simulation & Gaming: An International Journal, The Academy of Management Journal, The Academy of Management Journal of Educational Research, California Management Review, Sloan Management Review, Administrative Science Quarterly*, etc). Many different topics are addressed in articles related to enhancing student learning, including simulation characteristics (e.g., game complexity), player characteristics (attitudes, motivation, cognitive complexity, learning styles), and administration characteristics (team size, grading practices, the use of supplemental activities).

One approach to enhance student learning, mentioned early in the development of simulations that appears not to have received as much attention as the topics mentioned above, is the idea of introducing an instructor operated firm as a "par player." In addition, the research that has been conducted has used functionally-oriented marketing simulations rather than general management simulations. Since it is well known that role models can contribute to learning, it would appear reasonable to assume that "par players" can be used effectively by instructors to model the development and implementation of alternative strategies to point students in appropriate directions, as well as, to show the application of specific theories, tools, and techniques.

This article describes the author's experience with the use of "par players" to enhance learning in a general management simulation. The article builds upon the work of Wellington and Faria (1997), which is described first. The current study is then presented, including a description of the simulation used, the specific theoretical generic strategies being developed, the procedures employed, and

the results observed. Finally, some conclusions and suggestions for further research are provided.

## THE WELLINGTON AND FARIA (1997) STUDY

Wellington and Faria (1997) used *The Marketing Management Simulation* (Faria and Dickinson 1995) to explore the impact of optimally run instructor firms on student awareness and use of specific effective strategies in a marketing simulation. The instructor operated firms were being run "optimally" since the instructor had perfect knowledge of the industry environment. Management decisions in this simulation are made in four product-market segments (two products by two geographic markets). The decision areas for each product-market include price, quantity of product to be shipped, advertising level, advertising media, advertising message, sales promotion spending, and type of sales promotion program. Geographic market decisions include co-operative advertising allowances and sales force size. Sales force salaries and commissions apply to both geographic territories while research and development decisions are specific to each of the products. The simulation permits students to implement push or pull marketing strategies to move the product through the marketing channels.

In the study multiple industries were created, some of which responded best to push strategies and some which responded best to pull strategies. In half of the industries the authors managed one of the firms, making optimal decisions for whichever strategy would be most effective in that industry. They referred to the firms they managed as artificial market leaders. They hypothesized that students run firms would identify the best strategy more quickly in industries in which there was a rapidly introduced market leader, who was being successful by employing the optimal strategy for that industry. Thus, they had a research design and hypotheses set up as shown in Figure 1.

They found the students playing the simulation were sensitive to the presence of an industry-leading competitor in that they adjusted their strategies to be more like the leading competitor and therefore were more effective vis-a-vis the market environment. They suggest that simulation players will scan the competitive environment to identify success strategies and then implement those strategies. Thus, if there is a successful competitor in the market place other firms will learn through observation and begin to emulate that firm. The earlier a successful firm arises the earlier it is emulated by others. Thus, it appears that using a "par player" can enhance student learning in simulations.

**Table 1**  
**Research Design (Wellington and Faria, 1997)**

	Instructor Run Firms		No Instructor Run Firms
Push Strategy	Student Performance	>>>>	Student Performance
Pull Strategy	Student Performance	>>>>	Student Performance

## THE CURRENT STUDY

For a number of years, as students have operated their simulated firms, in the author's senior-level business policy class, there have been instructor led firms in the industry operating in competition with the students. To some extent this was done because the industry was created with a set number of firms prior to the beginning of the semester and then fewer firms were necessary, given the number of students in the class. In running these firms the practice was essentially to make random decisions at the outset and let the firms fail. In some cases attempts might be made later to see if failing firms could be turned around in order to demonstrate effective strategies and decisions. Prior to the semester for the current study an industry with 10 firms was created; however, given the number of students in the class only eight firms were needed. The original plan was to eliminate one or both of the firms or run random decisions; however, a few days prior to the semester the author read an article by Wellington and Faria (1997) entitled, "The Impact of an Artificial Market Leader on Simulation Competitive Strategies," which raised some interesting points related to introducing instructor operated par player firms.

Building upon the Wellington and Faria (1997) study it was decided to introduce the idea of a par player into the Micromatic simulation environment being used. The task was somewhat more difficult in Micromatic because it is a general management simulation, which covers all the business functional areas, and, therefore, does not depend on decisions in only one functional area, such as marketing, nor strategy, such as a push or pull, to determine success. In addition, the causal path was not as discernable as in the marketing simulation which has fewer variables affecting demand.

## THE MICROMATIC SIMULATION AND CONDITIONS CREATED

*Micromatic: A Management Simulation* (Scott and Strickland 1992) is a moderately complex general management simulation. The students take over a firm that has been in existence for two years, so the first set of decisions is for quarter 9 (i.e. year 3. quarter 1). A single product is sold in three different areas. In the marketing area the players deal with price, product improvements (quality), salespeople, and national and local advertising. The simulation administrator can modify a large number of parameters to create specific environmental conditions. The environment for this study had sales potentials increasing quite rapidly for the first 11 quarters and then declining quite rapidly for the final 5 quarters. In addition, each of the three market areas responded differently to the market mix

factors. Area 1 was highly price sensitive, so high prices only worked if all firms were willing to charge high prices, and the volume oriented firms clearly were not, until they realized that they could not keep up with demand. Even when this realization took place they still needed to charge prices below the maximum allowable if they were to maintain or increase market share. Area 2 was not at all sensitive to price, however, one needed a product that was differentiated in order to be able to command a high price. Area 3 required a more balanced mix among price, quality, salespeople and advertising in order to sell the product.

In the course the widely cited generic models of strategy of cost leadership, product differentiation, and focus developed by Michael Porter (1980) had been discussed, so this framework was used to establish the strategies for the instructor run firms. In the cost leadership strategy the emphasis is on efficiency, high volume and low price. The idea is that by being efficient one can still be profitable at a low price by selling a lot of units. Market share and sales in dollars become success criteria. These firms frequently must expand capacity which results in a larger asset base; so they tend not to use ROA as success criteria. In addition, these firms frequently have lower profits initially because of the expenses associated with expansion. In product differentiation the emphasis is on high quality and high price. One does not sacrifice efficiency but is willing to spend a great deal on research and development in order to generate new products and processes. These higher costs must be covered so price must be higher than firms which do not make such investments and this generally results in fewer units being sold. Among criteria used to determine success are ROA because the investment in plant and equipment tends to be less since one is not going for volume. The profits and profit margins can still be substantial because of the higher price which can be commanded in the market place. The focus strategy is a combination of cost leadership and product differentiation in which the firm "focuses" on a market segment rather than the total market.

In managing the instructor firms the author operated under similar constraints to those faced by the students. For example, there is a great deal of market information which the students can purchase each decision period and even though the author could look at their results to gain market information this was not done. Rather, the information which was deemed to be necessary for the strategy being pursued was purchased by the instructor managed firms. For both firms sales potential information and the newsletter were purchased to gain information concerning how the market was developing. For the instructor managed cost leadership firm, items such as prices and units sold were purchased, since this information is important to volume-

**Table 2**  
**Rank Order Results by Year for the Instructor Managed Firms**

	Full Volume Inc		Characteristic Inc.	
	Year 3	Year 4	Year 3	Year 4
Sales in Dollars	1	2	2	9
Market Share	1	2	9	10
Net Income	7	2	4	3
Stock Price	5	4	4	1

oriented firms; while for the product differentiation firm product improvement information was purchased, since these firms need to assess the uniqueness of the product. The instructor's decisions were always made before the students' submitted their decisions.

### OBSERVED RESULTS

Through the purchase of market information and review of the year end income statements and balance sheets for each of the firms, the players could make assessments as to what strategy a firm might be pursuing. The author provided a subtle clue to the generic strategies being pursued through the company names, Full Tone, Inc (a volume-oriented company) and Characteristics (a truly unique company). During the first year of operations the volume-oriented firm expanded rapidly; however, a number of other firms expanded even more rapidly. Thus, we had a number of firms pursuing a cost leadership strategy. The author's cost leadership firm did manage to achieve the highest dollar sales in the industry and market share in the industry but not the highest profit. The product differentiation firm purchased a large number of product improvements in its first year of operation so it did differentiate its product. For both firms the marketing mix was managed to fit the strategy of the firm and the conditions in the three geographic areas. Both firms were quite successful on criteria which were important for the strategy of the firm.

It was obvious that students were looking at firms which were successful and attempting to adjust their strategies and decisions accordingly. In addition, in the business plans which firms submitted after their first year (end year 3) of running the company, two firms specifically addressed what they thought the instructor managed firms were trying to do. By the end of the second year (end year 4) of operation four firms made mention of the strategies being employed by the instructor managed firms. Even more importantly, two firms specifically mentioned in their reports the marketing mix differences among the three geographic areas. Thus, students learned through observation and analysis.

### CONCLUSIONS

The use of an artificial market leader in Micromatic appears to be useful. While students in the past have successfully adopted different strategies, and identified different market conditions, it is the author's perception that

they have never done so as quickly or with as much depth as this year. In the future the author will be looking at the reports and results in greater detail to see if this practice should be continued and, if so, how it can be improved.

A note of caution seems warranted at this point. If, in fact, students pay attention to and follow the leads of a "par player" (role model), as instructor we better be certain we are modeling what we intend. As Norton and Kaplan (1992) note we need to be careful what is measured since behaviors will be directed toward those measures, and we will get what we ask for, which might not be what we actually want. A number of years ago this point forcefully driven home to the author. At the beginning of the semester two class sessions were used to discuss the Boston Consulting Group Model (Boston Consulting Group Staff, 1972). This model places a great deal of emphasis on market share. To the author's chagrin all of the student teams selected market share as the most important criteria to be used to evaluate the firms performance, which resulted in significant price wars and no firm was able to be profitable. A real world example is provided by the hotel chain that decided to reward managers by focusing on occupancy rates. While on the surface this might seem like a reasonable measure, what happens if the reward increases in such a way that you can really earn a lot if you get better than 100% occupancy? You may have achieved the objective but who is your clientele? The lesson is clear, be careful what lessons you teach and what you measure.

There are at least three limitations of this study that can be improved upon through further research. First, the sample size was quite small since there were only eight student run firms. Second, there was no control group used. Third, the conclusions were base upon observation more than empirical analysis. Each of these deficiencies can be eliminated in future studies.

### REFERENCES

- Boston Consulting Group Staff (1972) *Perspectives on Experience*, Boston, MA; Boston Consulting Group
- Faria, A. J. and Dickinson, J. R. (1995) *The Marketing Management Simulation*, LaSalle, ON: The Simulation Source.
- Kaplan, R. S.; Norton, D. P. (1992) "The Balanced Scorecard – Measures That Drive Performance." *Harvard Business Re-view*. Vol. 70, 71-79, January-February.

- Porter, M. (1980) *Competitive Strategy*, New York, NY: Free Press. A good summary of Porter's model can be found at [www.quickmba.com](http://www.quickmba.com).
- Scott, T. W. and Strickland A. J. III (1992) *Micromatic: A Management Simulation*, Boston MA: Houghton Mifflin.
- Smith, J. A. (2007). *Bernie Keys Library*. This publication contains the Proceedings of all the ABSEL Conferences, as well, as a number of other publications. [Available from <http://ABSEL.org>].
- Wellington, W. J. and A.J. Faria, (1997), "Impact of an Artificial Market Leader on Simulation Competitors' Strategies," *Developments in Business Simulation & Experiential Learning*, Vol. 24,152-157. Reprinted in the Bernie Keys Library, 6<sup>th</sup> edition [Available from <http://ABSEL.org>].