

## WHEN PROPHECY FAILS: A SMALL SAMPLE, PRELIMINARY STUDY

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### ABSTRACT

*Recent studies using THE BUSINESS STRATEGY GAME have shown that the learning of and attention to strategy ratings led to superior and large performance differences between winning and losing teams. This result is observed whether or not the participating teams are reminded of the strategy rating importance at the beginning of the competition or of the relevant total enterprise (TE) simulation manual pages before both practice decisions and all subsequent real decisions. This study produces the same results but focuses on the academic achievements of the competing teams. The results indicate that higher GPA teams outperform lower GPA ones.*

### INTRODUCTION

Recent studies (Patz, 2002, 2003, 2004) using THE BUSINESS STRATEGY GAME (Thompson, A. A., & Stappenbeck, G. J., 1999, 2002) show that the learning of and attention to strategy ratings led to superior and large performance differences between winning, first place teams, and losing, last place ones. Other variables, such as price, do not matter. The ones that do—and form the basis of an eight-point strategy rating system—are broad or focused product line, quality, service, brand image, low cost, market share leadership, superior value, and global or focused coverage.

This particular total enterprise (TE) simulation is concerned with manufacturing and marketing of athletic shoes—both branded and private label—using US dollars, Eurodollars, Japanese yen, and the Brazilian real in North America, Europe, Asia, and Latin America respectively. Participating teams also compete with celebrity endorsements, on the Internet, and with company owned retail stores

In addition to the strategy rating each team is measured on five other dimensions. They are sales revenue, after tax earnings, return on equity, bond rating, and company value

However, it is the strategy rating system that is pivotal in all the above noted studies. In each case the winning teams had significantly higher strategy, demand, and overall performance scores. Except for unit manufacturing costs in the first study, the winning and losing teams have no significant pricing or unit manufacturing cost differences.

But, the losing teams had significantly higher unit marketing costs.

### THE RESEARCH QUESTION

The first study of this series (Patz, 2002) did not have the additional features of the next edition of THE BUSINESS STRATEGY GAME (Thompson, A. A., & Stappenbeck, G. J., 2002). This later edition—used in the second and third studies (Patz, 2003, 2004)—included internet marketing and online sales, Latin America as a new geographic region, an option to open a chain of company owned retail stores, revised initial plant capacities, and restrictions on plant capacity expansions when forecasted worldwide demand is 25 to 50% below worldwide production potential. As noted previously, the Brazilian real is the Latin American currency

Nevertheless, the results were the same in all three studies. That is, using **W** for winning, first place teams, and **L** for last place, losing teams:

1. Price was not an important **W** and **L** distinction.
2. **W** firms experienced higher quantity demands than **L** firms.
3. **W** firms had lower unit marketing costs than **L** firms, and most important,
4. **W** firms strategy ratings were higher than **L** firms and the magnitude of the differences grew as the competition continued.

The second study simply repeated the first results with the new edition of THE BUSINESS STRATEGY GAME, but the third one added one additional administrative procedure. That is, *the students were reminded of the strategy rating importance and the relevant TE simulation manual pages before both practice decisions and all subsequent real decisions.* In the first two studies, this importance was mentioned only at the beginning of the competition.

Since the strategy rating prophecy failed to change the results in the third study, some other factor or factors had to be influencing these consistent results. The most obvious one, and the one examined in this study, is student grade point averages, GPAs.

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## THE HYPOTHESES

Therefore, there are two key hypotheses for this study. This first one:

*H1:* **W** firms will achieve increasingly higher strategy ratings than **L** firms, is obvious. There is no reason to expect different behavior. However, with regard to GPAs and using all teams involved in the competition—not just the **W** and **L** ones—the second one is:

*H2:* Firms with high ending simulation scores will be composed of members with high course grade point averages.

## METHOD

A TE simulation was conducted in 4 sections of an undergraduate, capstone strategic management course over a period of 2 semesters. Each section formed an independent industry, and a total of 169 students participated. All students were seniors majoring in the various fields of business administration.

## SIMULATION PROCEDURES

After one class session devoted to the clarification of simulation rules, evaluation procedures, and decision-making mechanics, a two-year practice decision sequence was completed. Questions pertaining to the results of each session were answered and the evaluation procedure was restated. That is, students were reminded that the cumulative scores at the end of the simulation were the figures of merit. They were reminded also of the strategy rating importance and the relevant TE simulation manual pages before both practice decisions and all subsequent real decisions.

The importance placed on ending cumulative scores rather than current period results emphasizes long- rather than short-term strategies. Moreover, attention was directed to three specific conditions. First, the actual ending period of the simulation would remain unknown. (Each period is a year in THE BUSINESS STRATEGY GAME, and the length of the semester allowed for a maximum of ten periods of play.) Second, all teams were expected to end their management tenure with a going concern, not a firm stripped of long term potential in order to gain short-term ranking enhancements. Third, 20% of the semester grade for the course depended on ending cumulative score rankings.

Decisions were due at specific times, processed by the simulation model, and the results were available to participating teams within two days. This allowed five days before the next set of decisions, required on a weekly basis.

## SIMULATION SCORING

In all trials of this simulation, the importance of each dimension in the overall percentage performance ratings is as follows: sales revenue, 5; after tax earnings, 15; return of

equity, 20; bond rating, 20; company value, 20; and strategy rating, 20. The sum, of course, is 100%; and, as a result, each team received a current period and game-to-date score between 0 and 100.

Furthermore, the participants were privy to the algorithm that determines cumulative scores in the simulation. These scores depended upon how each team's cumulative results compared with the leading team's results on each of the above noted six dimensions and their percentage weights.

For example, if the cumulative sales of the leading team are 100, and the second place team's cumulative sales are 80, then the second place team's score on that dimension is  $(80/100)(5)$  or 4 where 5 is the above percentage weight assigned to sales revenue. Each team received a weekly (one year) summary of their year and game-to-date results, and prepared their next decisions based upon these statistics and a vast amount of other data provided by the TE participant's program.

## GPA AND SIMULATION SCORE DETERMINATIONS

Every student in this capstone course receives a score between 0 and 100 on each of nine graded exercises—seven individual and two group ones. The individual ones are five quizzes @ 6%, participation @ 10%, and a final exam @ 30% for a total of 70%. The group ones are a case research presentation @ 10% and the simulations @ 20% for a total of 30%. Then, multiplying each graded exercise score by its percentage weight yields semester scores between 0 and 100.

Then, in order to not commingle semester scores and simulation scores, the GPA for each student is calculated without the simulation score. This permits a GPA score between 0 and 80 for each student, and the corresponding simulation performance score is the one assigned to the student's firm by the scoring algorithm of the simulation. Therefore, each student in the sample has a GPA score and a final, game-to-date, simulation score.

Last, for analysis purposes, each of the four sections is divided into halves. The upper half has the highest game-to-date simulation scores, and the lower half has the lowest ones. If hypothesis *H2* is correct the upper half in each section should have the highest GPAs, and the same situation should hold for all four sections combined.

## RESULTS

Six years of actual decisions were completed, and the key findings of this study are presented in Tables 1 and 2 and Figures 1 and 2. For example, the two-factor repeated measure analysis of variance shown in Table 1 indicates that on a 0 to 100 strategy rating scale, the average result for winners (**W**) over the six years, 89.1, was significantly higher than the 25.5 average for losers (**L**),  $F = 76.14$ ,  $p <$

Table 1  
Strategy Rating Analysis of Variance Summary

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Ss	44579	23			
Years	18243	5	3649	2.49	.0696
Ss w. Groups	26336	18	1463		
Within Ss	77941	24			
Strategy	48578	1	48578	78.13	<.0001
Performance x Years	17879	5	3576	5.60	.0028
Year x Ss w. Groups	11484	18	638		

Figure 1

### Strategy Scores

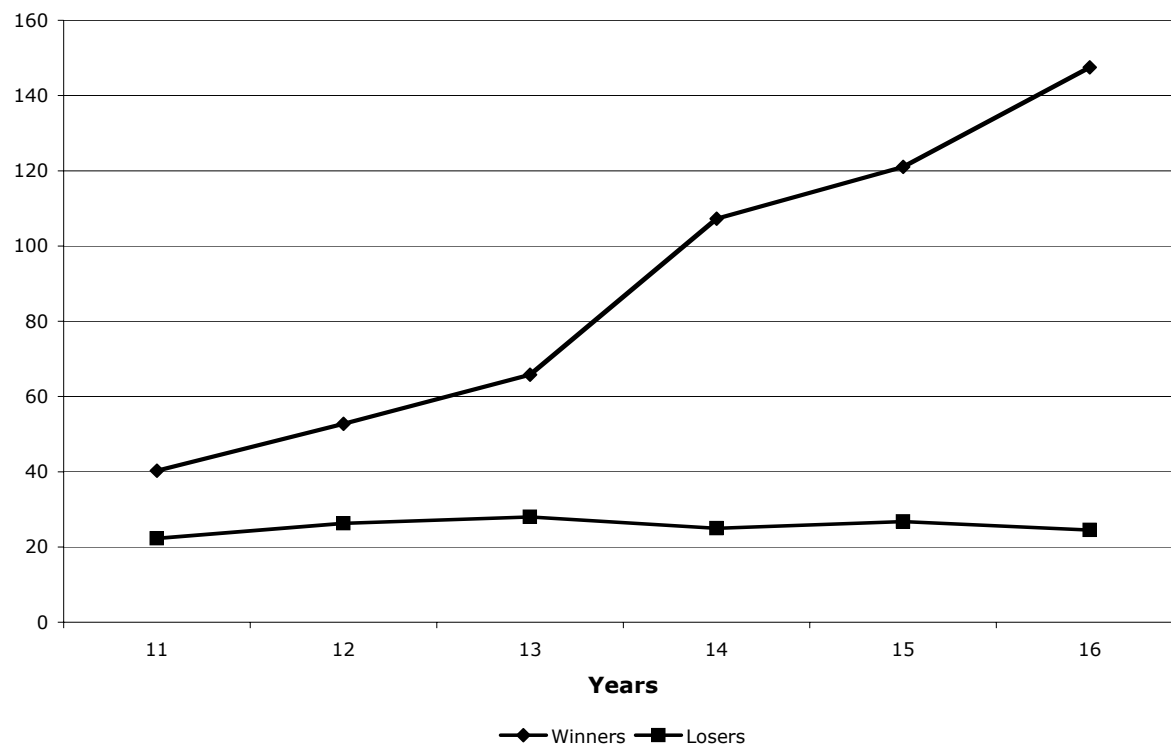


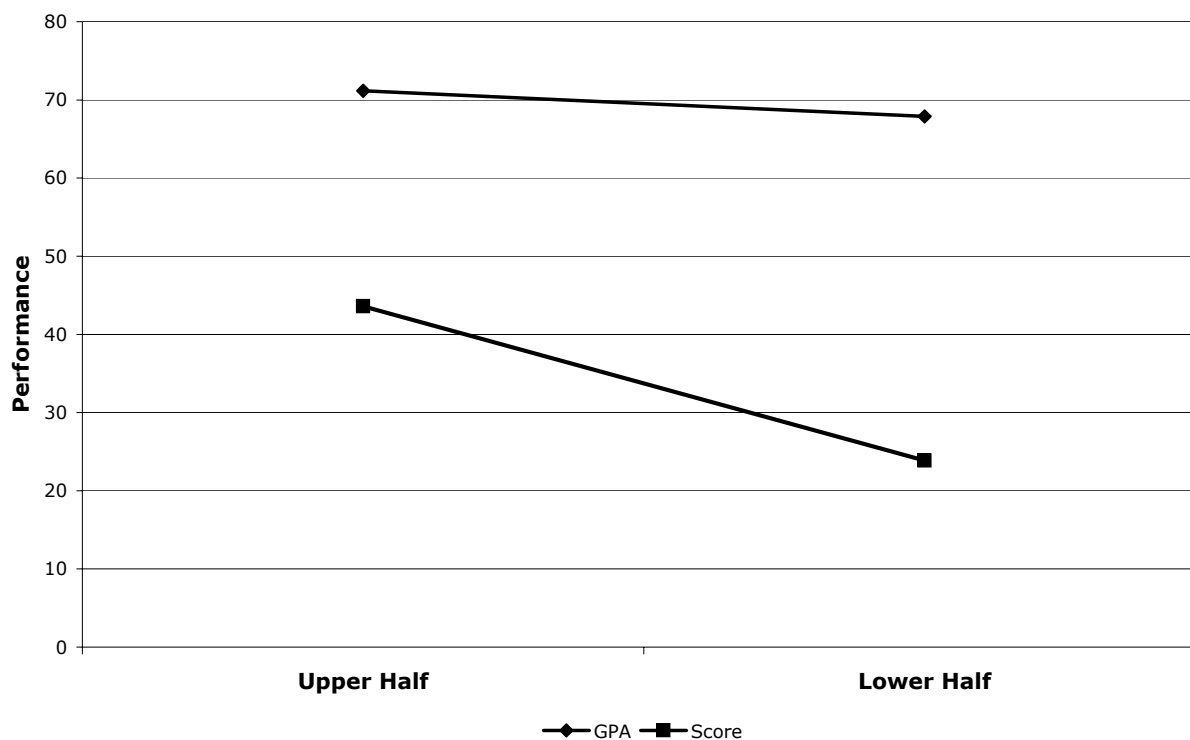
Table 2

*GPA Analysis of Variance Summary*

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Industry 1	2065	1	2065	3.9724	.0505
Industry 2	99	1	99	.3059	.582
Industry 3	10570	1	10570	173.64	<.0001
Industry 4	3508	1	3508	7.9871	.0058
All Four Industries	588	1	588	4.2364	.0620

Figure 2

**Class & Simulation Standings**



.0001. This was true for each of the six years,  $F = 2.49$ ,  $p = .069$ ; and the performance by years interaction,  $F = 5.60$ ,  $p = .0028$ , indicates that the strategy rating differences grew over the six-year competition exercise

This confirms hypothesis *H1*. The high performing **W** teams consistently have the highest strategy ratings—a result that has held across four consecutive studies.

Similarly, Table 2 and Figure 2 display the results for hypothesis *H2*. The results for the two-by-two factor (GPAs and Simulation Scores) analysis of variance is shown for each of the four industries and the combined industries. Only Industry 2 has no GPA differences between upper and lower half simulation performance scores. In all other cases, including the four industries combined, higher performance teams did have significantly higher GPA scores. Graphically, these results are shown in Figure 2

In short, even in a preliminary study using small samples, there is fairly strong support for hypothesis *H2*. In this study, firms with high ending simulation scores are composed of members with higher grade point averages.

### DISCUSSION

This small sample, preliminary study was motivated by the remarkable consistency of results in three previous ones. When the participating TE competitors are instructed regarding the importance of strategy ratings, the results remain the same. Winning teams simple dominate the strategy dimension.

So, when looking for other determinants of TE simulation success, course GPAs are the most obvious. But there are problems with this choice. First, do capstone course GPAs correlate with overall student GPAs? Also, typically in all four studies, the class GPAs form a rather tight curve. Does this make a difference?

Moreover, past research in this area—using different simulations—needs to be considered if it is available. The question here is: Are there any reliable themes, whether or not GPAs are a main concern?

Some of these themes could be the:

1. Use of more practice decisions
2. Use of a series of classes devoted entirely to the competition before beginning practice sessions.
3. Determination of interest (motivation) in the course itself.
4. An assessment of whether or not participant decision styles affect TE simulation outcomes.

All of these are directions for future research, including the use of the new online simulations, e.g., (Thompson, A. A., & Stappenbeck, G. J., 2005)

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