THE PEDAGOGY AND EFFICACY OF USING A SALES MANAGEMENT SIMULATION: THE MARS SALES MANAGEMENT SIMULATION EXPERIENCE

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LIMITED AVAILABILITY OF SALES MANAGEMENT SIMULATIONS

The use of gaming as a pedagogical device in the business professor's educational repertoire is not new. According to Burns and Gentry (1992) marketing simulations have been used since the 1960's. Furthermore, a study by Faria (1989) indicated that over 200 business simulation games were being used by approximately 8,600 professors at 1,733 business schools across the United States. The author's own professorial experience with a business simulation game dates back to the late 1970's with the classroom use of MARKSTRAT – then a mainframe program distributed on a large reel of magnetic tape.

While there are no specific numbers available for the classroom use of a sales management simulation, it can be surmised that its use has probably not been nearly as large as for general marketing simulations. For the past ten years or so, there have only been three simulations widely available with a specific sales management emphasis. Two of them are no longer in print. They are:

Dalrymple, Douglas J. and Harish Sujan (1995), *Sales Management Simulation 5th Edition*, John Wiley and Sons, Inc.

Dickenson, John R. and Anthony J. Faria (1995), *Sales Management Simulation*, South-Western – no longer in print.

Patton, W. E. III (1995), *Sales Force: A Sales Management Simulation Game*, Irwin McGraw-Hill – no longer in print.

And there are two 2003 entrants targeted for sales management education:

Cook, Robert W., James C. Cook, and Kathryn J. Cook (2003), *MARS Sales Management Simulation*, http://www.shootformars.com, Cook Enterprises LLC.

Nentl, Nancy J. and Craig Miller (2003), *SimSales Management*, Irwin McGraw-Hill.

In spite of the pedagogical advantages of using a simulation (to be discussed later) there have not been many sales force management simulations available on the market.

Simulations tend to be used as a supplement to a course, rather than as its main focus. Hence the financial burden on students of adding a simulation to the cost of a textbook (often over $100 for a hard cover text) is a major deterrent.

To keep the cost down, professors who use simulations often tell students to share a simulation manual, whereas they do not do the same for a textbook. Hence the market size for simulation manuals may be as little as ¼ the market for a similarly focused textbook. As a result, there is a greater monetary return for writing textbooks than for creating simulations.

Textbooks are the "norm" for instructional materials. Additional materials add to the professor's preparation burden. This time could also be spent in other productive endeavors. Hence there is a reluctance to add such materials.

Creating a simulation requires either significant computer skills or access to them. Writing a textbook does not. Most marketing professors do not have the programming expertise to develop a simulation without significant programming assistance.

The rapid pace of technological change and the multitude of hardware and software alternatives available create a host of compatibility and implementation issues. These problems get worse over time for simulation programs that are not updated.

Many professors do not have the computer expertise to deal with complex installation and compatibility issues as they arise.

It may make more economic sense to create a general marketing simulation for that significantly larger target audience than for the much smaller sales force management market.

The learning experience is only as good as the simulation. A poorly designed simulation where one variable dominates and allows students to win by "gaming", rather than by learning, is useless. Also, where a mistake can have long-lasting devastating effects, the simulation has the innate potential to lose its ability to engage students over its entire gaming horizon.

As a result, simulations targeted at a small segment of the market, such as sales force management, are few in number, and have historically been infrequently updated.

PEDAGOGICAL ADVANTAGES OF A SIMULATION

The primary pedagogical alternatives for teaching college level classes are lecture/discussion, role-playing, case studies, projects, films, guest speakers and simulations. The textbook is generally the primary learning aid, with the other tools included to enrich the course. Each of these approaches has its merits and drawbacks. And it is probably good that students are exposed to each teaching methodology at some point in their academic careers. However, in a recent study Chapman and Sorge (1999) concluded that, "The simulation used in this SFM course not only achieved some basic learning objectives, but also appeared to have done so better than the textbook and the current topic papers." The student preference for the use of a simulation over the textbook was confirmed in the present study.

Simulations are a very enriching part of the learning experience. Students learn the higher-level skills (e.g. problem-solving, decision-making, and analytical thinking) better by doing rather

than by being passive in a classroom. These are among the skills at the top of the list when employers are interviewed about attributes they would like to see in their hires.

Simulations aid in the development of group management skills. Students learn how to organize and work effectively in small groups. Skills relating to the management of small group dynamics, leadership, and persuasive communication can be developed.

Simulations aid the development of problem-solving, decision-making, and analytical skills. Doing well in a simulation requires a situation analysis to learn the rules of the game, experimentation and logical analysis to determine the forces impacting the desired outcome, and problem solving in a competitive environment. The development of these skills is invaluable.

Simulations provide exposure to a simulated real-world environment. Few undergraduate students have work experience that gives them a "feel" for what a sales force manager actually does. Simulations are analogous to the on-the-job training often used in sales environments, but without the inherent risks to the company or customers. It gives students a base from which to evaluate the application relevance of course material.

Simulations are, by there very nature, dynamic. The environment changes due to participant decisions and the evolution of variables built into the simulation model. Resistance to change is a major problem with many corporate cultures. Learning that stagnation is a death sentence is a pretty good lesson for students to learn. A dynamic environment certainly penalizes students who are not willing to change over time.

Simulations demonstrate the complexity of the interaction effects of sales force management decision variables. Most textbooks deal with topics one at a time. A simulation deals with them all simultaneously. Students get a feel for the complexity, interaction, and difficulty in measuring variables in a real-world setting.

Simulations provide active learning. Active learning is a very valuable complement to the passive lectures that are so frequent in college classrooms. It gets students involved in the simulated world, and demonstrates the useful application of the concepts discussed in the classroom. In a sense, it makes students more receptive to course content because they can see its application.

Simulations are competitive. It is never too early for business students to begin to understand the competitive nature of the modern business world. In a simulated environment there are winners and losers. This is a great learning experience for students.

Simulations add fun, excitement, and interest. Yes, students can have a great time while learning in a simulated environment. Simulations help turn students on to the subject being taught. It is much easier for students to lean in a fun-filled environment.

According to Faria and Dickenson (1994), the greatest benefit of all is the experience derived from participation in the simulation. They suggest that to learn how to play golf, drive a car, or

fly a plane, one must be actively engaged in that activity. Instruction alone is insufficient to gain a proficient skill level.

Adding additional teaching methodologies to use of the simulation can increase these pedagogical benefits. For example, Zych (1997) suggests the use of cases in conjunction with a simulation to obtain the benefits of both. And Alpert (1995) describes the use of "executive briefings" on a weekly or bi-weekly basis to help students get the most benefit from the simulation experience.

THE MARS SALES MANAGEMENT SIMULATION

Internet Based

The MARS SMS is differentiated from all of the other simulations that have been available for use in a sales force management context in that it is Internet based rather than PC based. Historically, simulations were created on computer disks. For "competitive" simulations (ones where the decisions of one team affects the results of others), professors were provided with a disk containing the simulation itself and their interface software. The simulation would be installed on the professor's computer, or on the school's network. Students were provided with an instruction manual and had to submit their decisions to the professor (either by disk or hard copy on decision forms). The professor would input their decisions, run the simulation, and return the results. This administrative process, required for every decision period, could be very time consuming. This was particularly so when student decisions were submitted on forms. The task of typing in student decisions for every team, double-checking the numbers, running the simulation, and printing out reports for every team could take as long as 45 minutes per team. For professors without student assistance, this became an administrative nightmare. In addition, PC-based simulations presented compatibility issues with both hardware and operating systems depending on the university's particular setup. These simulations tended to work well when first introduced, but over time they were not updated. Glitches began to creep in as university computing environments changed. There was often little that could be done to deal with the problems created.

Because the MARS SMS is Internet based, there are no equipment compatibility issues. All that is required to access the simulation is Internet access and an Internet browser. Installation of the simulation is not an issue. It requires no computer expertise beyond the ability to point and click, and as university computer environments change no compatibility issues arise. In addition, administration of the simulation to run each decision period takes only seconds. Because students directly input their decisions over the Internet, and receive their results in the same fashion; the professor only has to log on and click on the "run simulation" button. The MARS SMS system is extremely professor and student friendly.

Administrative Flexibility

The MARS SMS is easily adaptable to accommodate both physical location and class size. Because it is Internet based, it can be accessed wherever there is an Internet connection. Consequently, the professor can administer it from the office, home, or even when out of town.

For example, a professor attending the NCSM (National Conference on Sales Management) could access the Internet from his or her hotel, and run the simulation for students hundreds of miles away, back at their university. Likewise, it is just as easily used by students from a remote location. The professor can be at the main campus, and the participating students can be at remote sites around the state (or nation). Location of professor or student makes absolutely no difference in playing or administering the simulation.

The MARS simulation is designed to accommodate from 2 to 16 teams. Assuming teams of 4 students each, it can accommodate class sizes from 8 to 64. With teams of size 5, the upper limit goes to 80 students, and so forth. Because of the simplicity of administration, the MARS simulation can easily be run in multiple concurrent simulations. So, if there were a class of 120 students, the professor could easily divide it into two simulations of 60 students each and run two concurrent simulations with 12 teams of 4 students per team.

Theoretical Background

The literature on organizational psychology presents an employee's job performance to be a function of 5 basic factors. These factors are at the heart of the Churchill Model of Salesperson Performance. (Churchill, et. al. 2000): Role Perceptions, Aptitude, Skill Level, Motivation, and Personal, Organizational, and Environmental Variables

While a complete discussion of the model is beyond the scope of this paper, it does form a basis for the underpinnings of the decision elements and construction of the simulation. Therefore, a brief discussion of the simulation in the context of the Churchill model is in order. The MARS sales management simulation incorporates many aspects of this model. In the Mars simulation sales are a function of base compensation, quota, bonus, contest, recognition, supervision, training, account management, and salesperson satisfaction with rewards)

The relationships between the Churchill model variables and the MARS simulation variables are as follows:

1. Role Perceptions = f (supervision)
2. Aptitude = set at time of hiring, varies between the 5 salespeople
3. Skill Level = f (training)
4. Motivation = f (compensation, quota, bonus, contest, recognition, supervision, salesperson satisfaction with rewards)
5. Personal, Organizational, and Environmental Variables = f(account management, competition)

The MARS simulation does not purport to contain every conceivable aspect of each factor influencing salesperson performance. As with all models, it is a simplification of reality. But it is sufficiently complex and inclusive to prevent students from "gaming" a solution, and to illustrate the main drivers of salesperson performance. Furthermore, because it is competitive, every use of the simulation results in different outcomes. Unlike a simulation where students play against the computer (e.g. the SimSales Management Simulation), students are unable to go off and keep

playing the simulation until they figure out the "correct solution". The MARS simulation eliminates that possibility.

The Simulated Environment

Students take the role of a newly promoted, first-line, district sales manager. They have responsibility for directing and motivating 5 salespeople in their district. Each of the 5 salespeople in the district have a unique set of preferences, and experience levels; and as such respond differently to the various decision input variables available to students. Each sales person is assigned to a unique, geographic territory.

The product is a line of electronic video games that can be played on computers or a variety of gaming machines. Sales of these products are highly seasonal. This forces the students to carefully consider their decisions from one decision period to the next.

Since students cannot hire or fire their salespeople, they are forced to concentrate on the determinants of salesperson performance. Their job is to maximize that performance.

Decision Variables

Participants in the MARS Sales Management Simulation make a total of 53 decision inputs for their district. There are 10 decisions that are made for each of their 5 salespeople (50 total decisions), and 3 contest-related decisions that are made for their district as a whole. In addition, students have the opportunity to purchase 7 research reports reflecting the outcomes of the decision period. Finally they can purchase benchmarking reports representing the input decisions for any other team in the simulation. In total, the number of required decisions each period is 60, plus whether or not to purchase a benchmark for each of the other teams in the simulation. The decision input variables are illustrated in Table 1.

THE MARS SMS CLASSROOM EXPERIENCE

The MARS Sales Management Simulation was used in a Sales Force Management class, fall semester, 2003. The class was divided into 5 teams, and one independent study student was added as team 6. The independent study student was off-campus for the semester and participated from a location several hundred miles away. The simulation was only part of the independent study requirements. As a result, Team 6 was at a competitive disadvantage in the sense that it was made up of a single student whereas the other teams were composed of 4-5 students. Each team made 12 simulation decisions over a 12 week period. This represented a simulated 3 years, since each decision represents a simulated business quarter. The following is a discussion of the results of that experience.

Table 1
Decision Input Variables

Team I. T.

For Northern Region, District 1

Year: 1, Quarter: 1	Bob	Emily	Kevin	Jen	Katie
Salary	$12,500	$12,500	$7,500	$6,250	$4,000
Commission	8%	8%	8%	9%	8%
Quota	$0	$0	$0	$0	$0
Bonus	$0	$0	$0	$0	$0
Training	Technology Utilization	None	People Skills	Selling Technique	Product Knowledge
Supervision	10%	15%	20%	20%	35%
Acct A	40%	40%	40%	40%	40%
Acct B	30%	30%	30%	30%	30%
Acct C	30%	30%	30%	30%	30%
Recognition	Yes	None	Yes	No	No

Contest

Number of Winners: 0
Type of Prize: None
Total Dollar Amount of Prize(s): $0

Research Reports

Sales Person Satisfaction (Compensation), Customer Satisfaction, Sales Person Satisfaction (Non-monetary Motivation), Sales Forecast

One of the primary concerns in using a simulation is that it does not contain variables that can make or break a team with lasting effects. For example, in another salesforce management simulation one of the decision variables is a production request. If students make a mistake, and order a year's supply instead of a quarter's supply, they are stuck with very heavy inventory carrying costs and no means of disposal other than sales over an extended period of simulation decisions. They are essentially doomed by that one mistake to a last place finish. It was important to me that the MARS SMS not present such problems. Illustrated in Table 2 are the positional results of the six teams over the 12 week period, based on their net contribution to corporate profitability.

Table 2

12 Period Profitability Team Rankings

Team #	Period											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Team 1	2	4	4	1	1	1	3	3	4	3	3	4
Team 2	4	5	6	6	4	5	5	4	2	1	2	3
Team 3	1	2	3	4	5	4	2	2	1	2	5	5
Team 4	5	3	2	2	2	2	1	1	3	4	1	1
Team 5	3	1	1	3	3	3	4	5	5	5	4	2
Team 6	6	6	5	5	6	6	6	6	6	6	6	6

As can be seen in Table 2, other than Team 6 (the independent study student), teams demonstrated the ability to move upward or downward as the simulation progressed. For example, the team that started in first place (Team 3), successively dropped each period to fifth place; and then rebounded over time back to first place; and then finally back to fifth place. This was a positive result from two perspectives. First, the upward and downward mobility of the teams over time kept the excitement of the game going. Teams did not get discouraged, nor did they give up. Every team, except for Team 6, spent one or more periods in first place.

The results seem to indicate that there is a strong educational value in playing the simulation in teams rather than as individuals. Team 6 was the only team represented by one student, and that team never performed well at all. Obviously that may be a reflection of the ability or motivation of that single student, but it also may reflect the educational value of the exchange of ideas between team members. While nothing can be definitively said in that regard, it is an important distinction between Team 6 and all of the other teams. There was nothing inherent in the decisions of Team 6 that prevented it from moving up over time. The poor showing was a basic lack of understanding of how to make good decisions in the simulated context. This conclusion was based on email exchanges and telephone conversations with that student.

Where it was appropriate, textbook material was related to the simulation during classroom lecture/discussion periods. This took place during most lecture/discussion class periods. For example, the topic of forecasting was covered in class. The SMS simulation was used as the working example. It illustrated the usefulness of a time-series forecast, adjusted for seasonality. Students learned that they could forecast simulation demand (instead of purchasing the forecast at a cost of $5,000), and use that to aid in setting their salesperson quotas. It gave them a basis for understanding the application of textbook concepts, and made them more receptive to the material.

Student Reaction

A questionnaire modeled after the Chapman and Sorge (1999) study was administered to 22 students who took part in the MARS SMS exercise as part of their Sales Force Management class. Table 3 provides the mean scores for both studies on the same variables.

Table 3

Mean Scores for Measurement Variables

SMS-Specific Measures	Chapman & Sorge	Present Study
Helped understand SFM issues	7.43	7.50
Made course more interesting	8.02	8.18
Applied learning	7.51	7.36
Helped retain knowledge	7.48	7.45
Useful learning tool	7.96	7.86
Level of inolvement	8.27	8.09
Suggested future use	8.33	8.27
Book-Specific Measures	**Chapman & Sorge**	**Present Study**
Helped learn concepts	6.52	6.77
Kept me interested	5.02	5.55
Made me think	5.65	5.64
Suggested future use	5.15	6.64

The results of the student evaluation of the MARS Sales Management Simulation and the Ingram (2004) textbook in the present study were remarkably similar to results obtained in the Chapman and Sorge study. In both cases, students rated the use of the simulation significantly higher than use of the textbook from an educational standpoint. As with the Chapman and Sorge study, MARS SMS students felt strongly that the simulation made the course more interesting, helped them apply what they were learning in class, and overall was a useful learning tool. Their level of personal involvement was very high, and they confirmed the continued use of the simulation at a significantly higher level than they recommended continued us of the text.

CONCLUSION

The results of the present study confirm the results obtained in the study by Chapman and Sorge. The use of a Sales Management Simulation can significantly enhance the perceived value of instructional materials in a sales management class.

The MARS Sales Management Simulation was a very positive educational experience in its administration in the Sales Management class. It proved to be extremely easy to administer, and presented no student problems regarding input or output. Students were very receptive to the simulation from a pedagogical standpoint, and were energized by its competitive nature. They

perceived the applicability of the course content in the simulation, and by inference, to the real world beyond academia.

It provided the students with three simulated years of sales management decision-making experience. While the decisions were a simplification of reality to make them manageable in a course context, they were sufficiently complex to give the students a feel for what a career in sales management would entail.

The simulation allowed students to learn-by-doing. Their interaction with the simulation, coupled with immediate feedback, provided them with a very valuable educational experience.

The use of a simulation as a supplement to textbook content in a sales management class appears to have significant educational, and student motivational value.

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