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BUSINESS SIMULATION GAMES: CURRENT USAGE LEVELS
A TEN YEAR UPDATE

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ABSTRACT

A major survey involving over 1,500 mail questionnaires was undertaken ten years ago to determine the extent of business simulation game usage in academia and in business training programs. The current paper updates the earlier study through a mailing of 1,583 questionnaires to business school deans, business faculty, and training and development managers in industry. The findings from the present study show that business simulation game usage in academia and in industry has continued to grow over the past ten years with expectations of further growth.

INTRODUCTION

It has now been nearly forty years since the first known use of a business simulation game in a university class. Since the mid-i 950s business game usage has grown considerably. According to Wolfe (i993, p. 446), "0nce a novel and cutting-edge teaching technology, this method's use has reached the point of relative saturation in various American business course applications. While business simulation game usage is generally accepted as being widespread, few studies through the years have actually measured the extent of business simulation game usage. The purpose of this paper is to report on current business simulation game usage in academia and among business firms and to compare current usage levels with those reported in a major study undertaken by Faria (i 987) nearly ten years ago.

A BRIEF HISTORY

While the history of business games has been traced back to the use of board games and war games in China in the year 3000 BC (Wolfe 1993), the modern business simulation game dates back to 1955. In that year, the Rand Corporation developed a simulation exercise that focused on the U.S. Air Force logistics system. The simulation, called Monopologs, required its participants to perform as inventory managers in a simulation of the Air Force supply system in much the same fashion as current business simulations place the participants in the roles of company managers (Jackson 1959).

In 1956, the first widely known business game, Top Management Decision Simulation, was developed by the American Management Association (Meier et al. 1969). This was followed in 1957 by Greene and Andlinger's Business Management Game developed for the consulting firm of McKinsey & Company (Andlinger i 958) and the Top Management Decision Game by Schreiber - the first business simulation game known to be used in a university class (Watson 198i). The TOP Management Decision Game was used in a business policy class at the University of Washington in 1957.

From this point, the number of business simulation games grew rapidly. By 1961, it was estimated that there were over 100 business games in existence and that over 30,000 business executives had played at least one business game (Kibbee et al. 1961). The Business Games Handbook (Graham and Gray 1969) listed nearly 190 business games while The Guide to Simulations/Games for Education and Training (Horn and Cleaves 1980) described 228 business simulation games.

Since 1962, a number of studies have reported on business simulation game usage. Several early studies examined simulation game usage among AACSB member schools (Dale and Klasson 1962; Day i 968; Graham and Gray 1969; and Roberts and Strauss i 975). Biggs (1979) estimated simulation game usage in business schools by examining publishers' adoption lists. Faria and Schumacher (1984) surveyed business firms to develop an estimate of the use of business games in management training programs. Burgess (1991) has reported on business simulation game usage in the United Kingdom while McKenna (1991) examined business game usage in Australia. In the most ambitious study, Faria (1987) mailed over 1,500 questionnaires to universities and business firms to develop an estimate of simulation game usage in academia and in industry. As the results of the

current study are reported on the following pages, comparisons will be made to each of these past studies.

DATA COLLECTION

Data for this study were gathered through a mail survey. Three separate questionnaires were developed for: (1) business school deans; (2) business faculty; and (3) training managers for business firms. In total, 1 ,583 questionnaires were mailed.

The questionnaires used were very similar to those used by Faria (1987) who surveyed these same groups. In this fashion, comparisons could be made to the earlier survey. Each of the surveyed groups was questioned on current simulation usage, methods and conditions of use, future usage expectations, and were further asked to rate business simulation games against other teaching/learning methods.

The specific sampling method used and size of sample for each surveyed group will be described in the section of this paper discussing that group. Business game usage will be discussed under two major headings: usage in business schools and usage in business firms.

SIMULATION USE IN BUSINESS SCHOOLS

Simulation games have been in use in business schools since 1957 (Watson 1981). A 1962 survey of 107 AACSB member schools reported that 71.1% were using simulation games in at least one course (Dale and Klasson 1962). Two surveys of AACSB schools undertaken in 1967 indicated that 90.7% (Graham and Gray i969) and 94% (Day 1968) of the responding schools used simulation games in their curricula. Roberts and Strauss (i 975), using the same sample of schools as used by Dale and Klasson (1962), reported that 94.5% of the responding schools were then using simulation games. Finally, Faria (1987) reported that 95.i% of AACSB member schools used at least one business simulation game in their program during the i985-i 986 academic year.

Survey of Business School Deans

Previous studies have reported that simulation game usage at AACSB member schools increased from 71.1% of responding schools in 1962 (Dale and Klasson 1962) to 95.1% of responding schools in 1986 (Faria 1987). Has simulation usage at AACSB schools continued to grow? To answer this question, a mail questionnaire was sent to a sample of AACSB member schools. The 1994-1995 AACSB Membership Directory lists 765 member universities. After randomly determining a starting point, every other name was selected from the directory, resulting in a sample size of 383 schools. This represents approximately 50% of the total universe of AACSB member schools. The questionnaires were addressed personally to the dean of each school. Two questionnaires were returned resulting in an effective mailing of 381.

A total of 236 returns were received for a response rate of 61.9% of the effective mailings. This represents a larger number of responses than obtained in any of the previous reported studies on simulation game usage.

The first question posed to the deans asked if business simulation games were currently being used in any courses taught within their faculty. The response to this question, with a comparison to earlier surveys, is shown in Table 1.

TABLE 1
USAGE OF SIMULATION GAMES AT
AACSB MEMBER SCHOOLS

Study	Sample size	Percent Using Simulations
Dale and Klasson (1962)	**107**	**71.1%**
Graham and Gray (1969)	**107**	**90.7%**
Roberts and Strauss (1975)	**107**	**94.5%**
Faria (1987)	**315**	**95.1%**
Faria and Nulsen (1995)	**381**	**97.5%**

As shown in Table 1, the number of AACSB member schools using business simulation games somewhere in their programs continues to increase. Usage has now reached 97.5% of the 236 responding schools in the current survey. Projecting the 97.5% usage rate to all 765 AACSB member schools would indicate that business simulation games are currently being used at 746 AACSB member schools. While not a part of the current sample, discussions with simulation game publishers indicates that business games are in heavy use at non-AACSB member

schools and at community colleges as well.

The second issue addressed with the business school deans involved what disciplines within their faculties were using simulation games. The responses to this question along with a comparison to the Faria (1987) survey are shown in Table 2.

TABLE 2
SIMUYLATION USAGE AT AACSB
MEMBER SCHOOLS BY DISCIPLINE

	1987 #	Survey %	1995 #	Survey %
Business Policy	107	51.9.%	155	65.7%
Marketing	103	51.0%	148	62.7%
Finance	50	24.8%	92	39.0%
Management	36	17.8%	105	44.5%
Accounting	18	8.9%	37	15.7%
Other Courses	34	16.8%	44	18.6%

The results shown in Table 2 indicate that business simulation game usage has increased in all discipline areas since the Faria (1987) survey. The numbers and percentages in Table 2 are based on 202 responses to the 1987 survey and 236 responses to the 1995 survey. Interestingly, the ranking of usage by discipline has remained almost the same. The only change is that management has passed finance in usage in the 1995 survey.

Simulation usage is up at both the undergraduate and graduate levels since the 1987 survey and, currently, 77.8% of the responding deans indicated that simulation games are being used at both the undergraduate and graduate levels at their schools. Further, as the simple adding of the percentages in Table 2 would suggest, most schools are using simulation games in more than one discipline.

In terms of usage trends, 44.9% of the responding business school deans indicated that simulation game usage in their faculties has increased over the past five years while only 5.5% indicated that simulation usage has declined. The remaining 49.6% indicated no noticeable change has occurred. For the next five years, a surprising 50.4% of the deans expect simulation game usage to increase further within their schools while only 10.6% expect a decline.

These figures are equally favorable to those reported in Faria (1987).

Finally, the deans were asked about other uses of business simulation games within their faculties. A full 87 deans, or 36.9% of those responding, indicated that their students take part in intercollegiate simulation competitions and a further 79, or 33.5% or the responding deans, indicated that business simulation games were used in executive development seminars/programs at their schools.

Survey of Business Instructors

A major publisher of business textbooks supplied the authors with a mailing list of current business instructors at all four-year degree-granting schools in the U.S. The mailing list contained 42,732 names and included professors across all business disciplines. After determining a random starting point, every sixtieth name was chosen until a sample size of 700 was selected. Each selected business instructor was sent a personally addressed questionnaire and cover letter. Nine questionnaires were returned as undeliverable yielding an effective mailing of 691. A total of 372 responses have been received for a response rate of 53.8% of the effective mailings.

The first survey question asked if the respondent was currently using a business simulation game in any course. A total of 103 of the respondents (27.7%) indicated that they were using a business simulation game during the semester in which the questionnaire was received. This compares with i 7.1 % of the respondents to the Faria (i 987) survey who were current simulation users. Projecting the 27.7% users to the entire four-year teaching population of 42,732 from the mailing list would suggest that there are 11,836 business teachers using simulation games. This can be compared to the projection of 8,755 users from the Faria (i987) survey - a considerable increase.

In response to a follow-up question, 92 respondents (34.1 % of those who were not currently using simulation games) indicated that they had used a business game in the past. A wide variety of reasons were given, particularly a change in courses being taught, for the discontinuation of simulation usage. Only 6.9% of the respondents who have stopped using simulations did so because of dissatisfaction with business games. Interestingly, only 177 respondents[1] or 47.6% of the sample, had never used a business simulation game. This can be

compared to the Faria (1987) survey in which 71.9% of the respondents had never used a business game.

While business games were being used at the undergraduate, graduate, and executive seminar level, as with the dean's survey, business game usage was again reported to be highest at the undergraduate level. The amount of class time devoted to business games ranged from 2% to 80% with an average of 23.8% (Faria i 987 average = 28.9%). The course grade weighting for business games also ranged from 2% to 80% with an average of 25.1% (Faria 1987 average = 24.9%).

The majority of simulation users (51 .5%) indicated that there has been no change in their business game usage over the past five years while 35.0% indicated that their usage had increased and 13.5% indicated that their usage had decreased. For the next five years, 33.0% of the current simulation game users expect their usage to increase while 67.0% expect no change. No current users anticipate a reduction in their usage of simulation games. These figures are quite similar to Faria (1987).

The business instructors were asked to rate the effectiveness of various instructional techniques on a 1 (low) to 10 (high) scale. The overall results are shown in Table 3 while the results by simulation users versus non-users are shown in Table 4.

TABLE 3
MEAN RATING OF TEACHING
METHOD EFFECTIVENESS

Teaching Method	Faria (1987) Study	1995 Study
Lectures	7.5	6.6
Cases	7.4	6.9
Business Games	6.1	6.1
Textbooks	5.4	6.0

In both the Faria (1987) study and in the current study, business simulation games were ranked a poor third in teaching effectiveness behind lectures and cases and ahead of only textbooks.

Interestingly, the overall rating of business games (6.1 on a scale of 10) did not change over a nearly ten year period. When results are examined by simulation users and non-users, as would be expected, simulation users rate business games much higher than non-users (7.9 to 5.5). This

disparity is much wider than what was found in 1987 as Table 4 shows. Among simulation users, business games rank number one in teaching effectiveness but among non-users business games ranked at the bottom.

TABLE 4
MEAN RATING OF TEACHING EFFECTIVENESS
BY SIMULATION USERS AND NON-USERS

Teaching Method	Faria (1987) Study		1995 Study	
	Users	Non-Users	Users	Non-Users
Lectures	6.8	7.7	5.9	6.9
Cases	6.2	7.8	6.8	6.9
Business Games	7.1	5.8	7.9	5.5
Textbooks	5.2	5.5	5.5	6.3

TABLE 5
SIMULATION USERS AND NON-USERS BY
TEACHING AREA

Teaching Area	Percent Users	Percent Non-Users
Business Policy	58.9%	41.1%
Management	28.7%	71.3%
Marketing	26.7%	73.3%
Finance	13.0%	87.0%
Accounting	10.3%	89.7%

A comparison of simulation user and non-user demographics showed only minor differences. Simulation users tended to be slightly younger than non-users, have slightly less teaching experience, but slightly more full-time work experience. By teaching area, simulation users were most likely to be business policy instructors and least likely to be accounting or finance instructors as shown in Table 5.

SIMULATION USE IN BUSINESS

Soon after their development in the late 1950s, the use of simulation games for management training became very popular. The following comment appeared in the Wall Street Journal thirty years ago:
"The soaring popularity of business games stems from their effectiveness in supplementing the

pamphlets, lectures, and case studies on which most management training and employee-indoctrination courses are based N (Carlson 1966, p. 1). More recently, Puskurich (1993) forecasted that business simulation games would exhibit dramatic growth in management training programs.

Among the early business users of simulation games were General Electric, IBM, Westinghouse, Caterpillar Tractor, Pillsbury, AT&T, RCA, Procter & Gamble, Joseph Magnin, May Department Stores, Sun Oil, and Walden Books. By the mid-1960s, Boeing was using three simulation games: Operation Feedback was played by employees in line for beginning management positions; Operation Suburbia was played by middle managers; and Operation Interlock was played by top management in retraining/refresher courses (Faria and Schumacher 1984). Currently, AT&T puts 500 management trainees per year through the *Strategic Management Game* at its Aurora, Colorado training facilities.

To examine current simulation game usage among business firms, a mailing list of corporate personnel training directors was obtained. The list contained 8,595 names and company addresses. After determining a random starting point, every sixteenth name was selected until a sample size of 500 was obtained. Each of the sample members was sent a personalized letter and questionnaire. Thirty-five mailings were returned as undeliverable resulting in an effective mailing of 465. A total of 185 completed questionnaires were returned for a response rate of 39.8% of the effective mailings.

The first question asked the training directors if their companies used simulation games or exercises as part of their training programs for new managers. Of the 185 responding directors, 75 (40.5%) said yes while 110 (59.5%) said no. The second question posed to the training directors was whether simulation games were used in training programs for current or experienced managers. The responses to this question were exactly reversed from the responses to the first question, 110 (59.5%) said yes and 85 (40.5%) said no.

For the two questions combined, the results show that 11 5 companies (62.2% of the responding companies) use a business game somewhere in their training programs while 70 companies (37.8%) do not. The Faria (1987) study

reported that 55.3% of the responding companies used a simulation game in either beginning or ongoing training programs while 44.7% did not. Thus, there seems to be an increase in business game usage in training programs.

Generally, larger companies tended to be business game users. The majority of using companies (65.2%) had over 1,000 employees while the majority of non-using companies (64.5%) has fewer than 1,000 employees. For companies using business games, the simulation tended to occupy about 30% of the training time in initial training programs and 25% of the training time in ongoing training programs.

Of the 70 companies reporting no current simulation usage, 25 (35.7%) reported using business games in the past. Of the 25 companies that used simulation games in the past, five (20.0%) planned to use business games again in the future. Of the 45 companies that have not used business games in the past, 25 (55.6%) indicated that they had no plans to use business games in the future while the remainder of the companies weren't sure.

The great majority of business game using companies (82.6%) indicated that they first began using business games after 1980. A few companies, though, 10 or 8.7% stated that their business game usage goes back beyond the 1 970s.

The Faria (1987) study indicated that the majority of companies using simulation games purchased them from outside sources. The current study suggests that the majority of companies using simulation games have developed their own. A full two-thirds of the companies using business games for initial training and 63.6% using simulations for ongoing training have developed their own business games.

The most frequently mentioned purchased games were Jungle Escape, Lost in the Desert, International Partnerships, Electronic Maze, Bafa-Bafa, Star Power, Where Do You Draw the Line?, Uncocktail Party, Plate Company Financial Game, Promises- Promises, Desert Kings, Do Your Best, Looking Glass, Pumping the Color, Desert Gold, Lost on the Moon, Lost at Sea, Lost Dutchman, The Manufacturing Simulation Game, and Fly Smart. Common sources for outside simulations cited were the Strategic Management Group, DDI, Eagle Flight, Executive Perspectives, Launchbury & Associates, International Press, Block Pettrela, ODD, Intercultural

Press, and the Lakeland Group.

To forecast total business usage of simulation games, data from the U.S. Department of Commerce can be examined. According to the Department of Commerce, there are 5,636 companies in the U.S. with more than 1,000 employees. In the present study, 75% of the responding companies with more than 1,000 employees reported using business games. Thus, taking 75% of the 5,636 companies with more than 1,000 employees provides an estimate of 4,227 simulation using large companies. Another 7,603 companies have between 500 and 999 employees. If 47.1 % of these companies use business games (based on the findings of this study), we have another 3,581 simulation using companies. Together this provides an estimate of 7,808 businesses using simulation games in their training programs. This is considerably more than the estimate of 4,900 to 6,100 using companies from Faria (1987).

DISCUSSION

The survey results reported in this paper would suggest that simulation usage in academia and in business is quite high and, seemingly, still growing. The survey of business school deans suggests that 97.5% of all AACSB member schools are using at least one simulation game somewhere in their program. The survey of business faculty suggests that there may be as many as 11,836 faculty members using business simulation games during any given academic year. The survey of training and development managers suggests that there may be as many as 7,808 business firms using simulation games in their training programs. All of these numbers are higher than reported in the Faria (1987) and earlier surveys.

Are the numbers reported here reasonable? The number of schools using simulation games is very reasonable when compared to information from publishers' adoption lists as examined in recent years by Biggs (follow-ups to his 1979 paper). The deans' survey responses with regard to intercollegiate simulation competitions is in line with registrations in these competitions across the U.S. The heavy use of simulation games in business training programs is consistent with findings reported in Training (1992) and by Puskurich (1993). Training (1992) estimated that 6,000 business firms were using simulations in their management development programs. As such, there is some collaborative evidence for the numbers reported in the current survey.

How does business game usage in the United States compare with simulation usage elsewhere? Two recent surveys conducted in the United Kingdom (UK) and Australia provide some similarities and some discrepancies. Burgess (1991) reported that 92.0% of the business and management departments of UK polytechnic schools and 48.9% of UK universities used business games. When compared to usage in the U.S.: (a) most simulations used in UK universities were developed in-house while most games used in U.S. universities are published simulations; (b) universities in the UK are more likely to use simulations at the graduate level while usage in the U.S. is higher at the undergraduate level; and (c) respondents in both countries agree that there will be considerable future growth in simulation usage.

According to McKenna (1991, p. 36), simulation usage in Australia "is a relatively new and rapidly growing phenomenon. Current usage in Australia is lower than that found in either the U.S. or UK with about 55.2% of business schools in that country-using business games. McKenna cites several reasons for the lower usage rate including: (a) the history of game usage in Australia dates back only about ten years; (b) few Australian based games, most currently used are modeled on the U.S. economy; and (c) lesser availability of computers and software.

Wolfe (1993) provides an interesting history of business games in the former Eastern Bloc Countries but does not have an estimate of the degree of business game usage in these countries. Further discussions of the use of simulation games in these countries can be found in Gernert, Assa, Habedank and Wagner (1986) and Siebecke (1988).

CONCLUSION

The present study has shown that business simulation games are alive and growing. Have they reached the "point of relative saturation" spoken of by Wolfe (1993)? Maybe in the U.S. but it will take another survey in the years ahead to know for sure. Certainly, however, there is much opportunity for business gaming growth in other countries around the world. The former Eastern Bloc Countries who

are striving to convert to a more western style economy offer a prime opportunity area. Current ABSEL members have run seminars using business games in Russia, China, Estonia, Latvia and Slovenia, to name a few places, with great success. As Wolfe (1993) states, usage in these countries may be ready to take off.

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