

# Use of business simulation games in Hong Kong

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*A major survey covering all seven Hong Kong universities, polytechnics, and colleges was administered to examine current usage of business simulation games and how and why they were used. The findings from this study were favorable.*

**KEYWORDS:** *Hong Kong; simulation games; simulation evaluation; simulation usage; usefulness of computer simulation*

Business games have begun to assume a role in the education of our students in many universities in Hong Kong. Yet quantitative information on simulations used in the Hong Kong tertiary institutions has been very limited. The article examines the use of business games, how and why they were used, and the value that lecturers believed that business games could add to their students' learning experience. Data obtained from this Hong Kong study will be compared with other similar studies done in Australia, the United Kingdom, and the United States.

## **Data collection**

A mail survey questionnaire was sent to all local universities and polytechnics funded by the Hong Kong Universities Grant Committee, and which offered an undergraduate degree in the business area during the period of 15 December 1994 to 15 March 1995. The list of faculty members was compiled from direct inquiry and confirmed by checking prospectuses and telephone directories. A total of 632 survey questionnaire packages were sent out, including a cover letter, the questionnaire, and a stamped return envelope, and 142 usable questionnaires were received. A 22.5% response rate was recorded.

## **Results and discussion**

### **Computer simulations usage**

Use of computer simulations in Hong Kong was moderate, with 24.6% of 142 respondents indicating that they used simulations (see Table 1). However, only 29% of

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**TABLE 1: Past Usage of Computer Simulations in Previous Teaching**

	<i>Frequency</i>	<i>Percentage</i>
Had used before	35	24.6
Did not use before	107	75.4
Total	142	100.0

**TABLE 2: Still Using Computer Simulations in Teaching**

	<i>Frequency</i>	<i>Percentage</i>
Still using	10	29.0
Stopped using	25	71.0
Total	35	100.0

**TABLE 3: Plan to Use Computer Simulations in Future**

	<i>Frequency</i>	<i>Percentage</i>
Yes	9	8.0
No	98	92.0
Total	107	100.0

these users acknowledged that they were still using business games at the time of the survey. The rest (71%) of the users had stopped (see Table 2). When asked if nonusers might use business games, only 8% indicated "yes" (see Table 3).

When compared with Faria's (1998) current study, usage in all discipline areas reached 97.5% from 95.1% in his previous study (1987), and 65.7% of the deans said that business games had been used in their strategic management courses. In the Williams (1993) study, 34.7% of 265 respondents used simulations. About 30.6% of nonusers would resume use of simulations, whereas 69.4% would not resume use of simulations. About 46% of simulation usage were recorded in the Keeffe, Dyson, and Edwards (1993) study, and 38% in Decker, Bibb, and Likins (1993).

Based on the Burgess (1991) survey in the United Kingdom, academia response was 146; 63% were users and 37% were nonusers. The Australian study by McKenna (1991) indicated that 55% of respondents (out of 58 usable questionnaires) were users.

### **Simulation usage by discipline**

When respondents were asked "in which subjects they used computer simulations," only 50 responded. The two primary subjects in which they used computer simulations were business policy and strategic management (36.2%) and marketing and related subjects (29.8%). Both the business policy and marketing courses showed the highest

**TABLE 4: Simulation Usage by Discipline**

	<i>Frequency (out of 50)</i>	<i>Percentage</i>
Business policy and strategy	17	36.2
Marketing and related subjects	14	29.8
Finance	7	14.9
Accounting and related subjects	7	14.9
Production and operation	5	10.6
Human resource management	7	14.9
Management and MISS	9	19.1
Economics and related subjects	5	10.6
Other subjects	7	14.9

scores in two usages, Faria's 1998 study and his previous 1987 study. Table 4 provides information on business games usage by discipline.

#### **Name of simulations in each discipline**

Respondents were asked to write down the name of computer simulation packages. Table 5 shows the names of the simulations used in each course. Two business game packages, the BUSINESS POLICY GAME and MICROMATIC, were recorded here. They were also listed in the Keeffe et al. (1993) and Decker et al. (1993) studies. In Keeffe et al. and Decker et al., the BUSINESS POLICY GAME was also the most frequently used package in the United States. The MICROMATIC, the Number 1 (Keeffe et al., 1993) and Number 3 (Decker et al., 1993) most frequently used business simulation in business policy courses, was in fact used in organizational behavior courses in Hong Kong. UNISIM and MARKSTRAT, used in Hong Kong, were the games most frequently cited by academia and business in the United Kingdom (Burgess, 1991). The following simulation packages—BUSINESS POLICY GAME, MARKSTRAT, and STELLA—were mentioned by Hong Kong institutions and represented 3 of the 18 simulations in use in Australia (McKenna, 1991).

#### **Grade weights assigned to various subjects' activities**

Respondents were asked to assign grade weights to four major activities in their classes: examination, computer simulation, case study, and student participation, plus other activities. The typical Hong Kong simulation user (53.1% of respondents) would assign between 11% to 20% of the total subject grade to simulations. This is slightly different from the Decker et al. (1993) and McKenna (1991) reports. Decker et al. (1993) reported that the preference of their simulation users (74.7%) was between 10% and 30%. In the McKenna (1991) report, more than 70% users agreed that "simulation contributed up to 40% of assessment for the course." The recent study by Faria (1998) recorded that the "course grade weighting for business games ranged from 2% to 80%, with an average of 25.1%."

TABLE 5: Names of Computer Simulations in Each Discipline

<i>Name of Computer Simulation Package</i>	<i>Frequency</i>	<i>Subject Area</i>
MARKETING GAMES	3	Product policy
COMPETE	1	Management
UNISIM	1	Course leader program
DEAL	1	Business strategy
BUSINESS WEEK	1	Business strategy
COMPETITION	1	Business strategy
THE BUSINESS POLICY GAME	1	Business strategy
MONETA DEPARTMENT STORE	1	Strategic management
MANAGING FOR SUCCESS	1	Strategic management
SMITH/GOLDEN: CORPORATION	1	International business/ strategy
ESP	1	Small business management
THE MARKETING OPPORTUNITY	1	Marketing management
BRANDMAPS	2	Marketing management
MARKETOPS	1	Marketing management
BANKBUC \$	1	Strategic marketing
INDUSTRAT	1	Strategic marketing
MARKSTRAT	3	Strategic marketing
STOREWARS	1	Strategic marketing
CHANCELLOR	1	Economics
MICRO MONOPOLY	1	Economics
MICRO CALL	1	Economics
COURNOT OLIGOPOLY	1	Economics
ESL DA	1	Economics
PGODS	1	Economics
MICROMATIC	1	Organizational behavior
STELLA	1	System dynamics/ workflow simulation

With reference to this study, the modal responses on the rest of the grade weights were examination, 41% to 60% (54.3% of respondents); case study, 11% to 20% (70.4% of respondents); and student participation, 1% to 10% (60% of respondents). This reflects that more than half of the Hong Kong lecturers still believed in the merit of traditional final examinations. But this is not true in Australia, where the examination was considered “least popular,” according to McKenna (1991). Table 6 provides a brief summary of grade weights assigned to simulation.

### Usefulness of computer simulations

The author looked into the effect of computer simulation on achieving course objectives. A 4-point Likert-type scale ranging from 1 (*critical*), 2 (*important*), 3 (*less important*), to 4 (*not an objective*) was used. Twelve course objectives (Decker et al., 1993) were measured. An open-ended item was also included for respondents.

TABLE 6: Grade Weights Assigned to Computer Simulation

	<i>Frequency (out of 32)</i>	<i>Percentage</i>
1% to 10%	8	25.0
11% to 20%	17	53.1
21% to 30%	6	18.8
31% to 40%	0	0.0
41% to 60%	0	0.0
61% or above	1	3.1
Total	32	100.0

NOTE: Valid cases = 32; missing cases = 18.

The result showed that “understanding functional interrelationships,” “general problem identification and analytical skills,” and “developing decision-making skills” were highly important objectives cited by Hong Kong respondents. Their means were 1.870, 1.914, and 1.971, respectively, ranging between critical and important. When compared with the Decker et al. (1993) study, more than 53% of respondents also agreed on the importance of those objectives.

“Improving verbal communication skills,” “improving writing skills,” and “using secondary sources” were rated by Hong Kong respondents to be less important and not an objective in the use of computer simulations. Their means were 3.400, 3.176, and 3.000, respectively, spanning between less important and not an objective. In the Decker et al. (1993) study, the result is similar, and only less than 14.8% of simulation users agreed that these three objectives were important. Table 7 shows the details of the breakdown.

### Evaluation of computer simulations

Respondents were asked to rate the effectiveness of computer simulations. Two questions were used to tap into “general impressions of computer simulations” and “rating on how computer simulations contribute to students learning.” A 5-point Likert-type scale ranging from 1 (*excellent*), 2 (*above average*), 3 (*average*), 4 (*below average*), to 5 (*poor*) was employed for this purpose.

The average mean for the first theme, “general impression,” was 2.081. The result was very close to above average. As for the second theme, “how simulations contribute to learning,” it was 2.00, just above average. The results in other studies were equally favorable. Decker et al. (1993), in their study on “the overall evaluation of your present simulation” and “its contribution to student learning,” reported that “less than 5%” of the respondents rated them as below average and “almost one third” rated them excellent. As reported in Burgress (1991), 61% of the academic users said that computerized games were “extremely useful” and 39% found them “moderately useful.”

Although he used a different approach, McKenna (1991) found that the simulation gaming was superior to other teaching methods. Of his respondents, 78.1% rated 4 (*agree*) or 5 (*strongly agree*). Although not considered the best, business games were ranked third in teaching effectiveness in the Faria (1998) study. Both respondents in

**TABLE 7: Usefulness of Computer Simulations**

	M	SD
General problem identification and analytical skills	1.914	0.612
Understanding functional interrelationships	1.857	0.912
Learning concepts related to business	2.176	0.716
Developing planning skills	2.057	0.765
Developing decision-making skills	1.971	0.747
Understanding general management perspectives	2.400	0.946
Improving group processing skills	2.229	1.003
Using financial data to make management decisions	2.086	0.818
Improving written skills	3.176	0.716
Improving verbal communication skills	3.000	0.816
Encouraging student computer use	2.771	0.877
Using secondary sources	3.400	0.563
Other	2.750	1.500

**TABLE 8: Evaluations on Simulations**

	M	SD
Maintaining student interest	1.639	0.639
As a tool to link the course to reality	1.778	0.591
Flexibility of simulation	2.667	0.793
Ease of student use	2.750	0.906
An error-free program	2.943	1.162
Use of student manual	2.944	0.924
Minimizing student frustration	3.000	0.828
Other	2.333	0.816

Hong Kong and their overseas counterparts have a high opinion of computer simulations.

When more specific criteria were used to evaluate business games, several interesting results showed up. Hong Kong respondents rated "maintaining student interest" and "as a tool to link the course to reality" more than above average, with means of 1.639 and 1.778. Table 8 provides this information. This is somewhat similar to the Decker et al. (1993) study, where almost 86% of the respondents ranked simulations as above average or excellent on maintaining student interest, and about 75% rated simulations above average or better as a tool to link the course to reality.

Hong Kong respondents rated just average for "use of student manual" and "minimizing students frustration" with scores of 2.944 and 3.000, respectively. In a similar study by Decker et al. (1993), 52% of the respondents rated the manuals above average and about 18% rated them below average. Only 30% rated minimizing student's frustration as above average and 13% rated it below average. From both Decker et al. and this recent report, it seemed that the respondents were reasonably satisfied with the

**TABLE 9: Reasons for Not Using Simulations (in percentages)**

	<i>Past Users Who Plan No Future Usage (n = 92)</i>	<i>Past Nonusers Who Plan No Future Usage (n = 85)</i>
Other reasons <sup>a</sup>	50.0	48.2
Lengthy preparation time	31.5	32.9
Start-up cost (software + hardware) is too high	25.0	27.0
Case study is more valuable	23.9	24.7
Student may treat simulation as “playing” and learn little from it	10.9	10.6
Lack of formal training opportunity	23.9	25.9
Simulation is unrealistic or too simplistic	9.8	9.4

a. See Table 10.

current use of business games. Keeffe et al. (1993) also reported user dissatisfaction on administration and logistics (25% of users), game unrealistic (20.83% of users), and time constraints (20.83% of users). The Australian experience (McKenna, 1991) suggested that simulations can also “provide an enjoyable learning experience; require participants to make a balanced set of decisions; provide adequate information; and facilitate adequate ‘what if’ analysis.”

### Reasons for not using simulation as a teaching tool

In Hong Kong, more than 50 respondents indicated that “lengthy preparation time” (31.5%) and “high start-up cost” (25.0%) were two of the main reasons for not using simulation in their course. When compared with the Snyder (1997) study, 28.8% of nonusers quoted the lack of perceived time as one of the main reasons, and 31.6%, also nonusers, suggested that they were not aware of any appropriate simulations.

About 23.9% of Hong Kong respondents thought that case studies were more valuable than simulations. It is also interesting to note that another 23.9% admitted that they did not have any formal training in simulations and therefore they did not know how to use it (see Table 9). In another study (in the United States), 18.9% were reported to have fear over complexity of simulations (Snyder, 1997). The Decker et al. (1993) study on reasons for not using simulations showed that more than 60% of respondents indicated “lack of time” and 34% said “case studies are more valuable.” Similarity was found on “lengthy preparation time” versus “lack of time” and “case studies are more valuable” as two of the primary reasons for not using simulations in both studies. Only 10% said “instructor’s start up costs were too high” (Decker et al., 1993), and this view in the United States was different only in degree from our current study (25%).

On not using simulations, Williams (1993) reported that 20.6% of respondents viewed there was no significant impact on learning, and 18.3% referred to too much number crunching and too little subjective analysis. Only 16% said inadequate resources was the reason for their nonuse. This was somewhat higher than the Decker et al. (1993) study (10%) but still lower than the Hong Kong study (25%). Only 10.7%

**TABLE 10: Other Reasons for Not Using Simulations**

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1. Not familiar with and haven't thought about
  2. Not available/not relevant
  3. Inappropriate for a class involving more than 200 students
  4. Lack of good simulation package
  5. Not applicable
  6. Teach other course now
  7. Consume too much time in relation to the learning they get from the simulation
  8. No assistance
  9. No need for my particular courses
  10. Few good packages around
  11. Lack of rigorous models to form the basis of a simulation model in the area I learn
  12. Don't know how/what it is
  13. Simulation packages may not be directly related to the learning objective for a lesson
  14. Culture and environment
  15. Computer phobia
  16. Lack of supply in department
  17. Teaching time usually insufficient for holding a full simulation exercise
  18. Not necessary
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thought there was too much work for the teacher (Williams, 1993). This was somewhat lower than the Hong Kong study (31.5%).

Another study by Keeffe et al. (1993) cited resistance to administration and logistics (25% of respondents), time constraints (20.83%), "game unrealistic" (20.83%), "micro, not strategically oriented" (12.5%), "budget not satisfactory" (12.5%), and "computer-related problems" (8.34%). Table 10 gives "other" reasons for not using simulation.

### Conclusions

The study reported here represents a first major attempt to examine the use of business gaming in Hong Kong tertiary educational institutions. Most of the users taught in the business policy and marketing areas. Their views on usefulness and their evaluation of business gaming were positive, showing support for Wolfe's (1993) statement and Faria's (1998) comment on the possible growth in usage of business simulation games in Asia. Although there was 24.6% usage recorded in Hong Kong, only 28.6% of this group (10 out of 35) are still using business games in their courses. Reasons for not using them are related to lengthy preparation time and high start-up cost. When asked if nonusers might use business games, only 8% indicated "yes" in the current study. An extension of this research would be to explore nonuse of business simulations following up Snyder's (1997) article on why business games are not used, and why the argument in support of growth opportunities for business games may encounter some serious challenges in Asia.



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