THE INFLUENCE OF DEMOGRAPHIC FACTORS ON BUSINESS SIMULATION EFFECTIVENESS

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ABSTRACT

Educators, employers, and policy makers have been searching for ways to help their students learn to think. In order to assist students to think and solve problems, business educators have turned to business simulation as an alternative way to develop people. Business simulation is a teaching method that can assist in developing a learning environment, which exposes students to complex situations that needs strategic decision-making. At the Faculty of Economics and Business, UKM, business simulation has been integrated in a strategic management course as a platform for students to make management decisions in a dynamic environment. A study on 165 students had been conducted to measure the influence of demographic factors on the effectiveness of business simulation. Our findings showed that students' gender, race, academic qualification, academic programme, and career ambition have influenced the simulation effectiveness. On the other hand, students' C.G.P.A, simulation performance, English language capability, and work experience have no influence on the effectiveness of business simulation.

Keywords: Business simulation, demographic factor, teaching tools, business games, strategic management.

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1.0   INTRODUCTION

The ability to think critically and solve ill-structured problems has become essential in a competitive world today. As a platform to produce future managers, the business school is facing many uphill challenges to meet these issues. A lot of criticisms and comments have been made on business education and business educators. Behrman and Levin (1984) clarified that business education have emphasized too much on quantitative analysis, tools, and models but little emphasis on qualitative thinking, complex trade-offs, and creativity. Management and business education was perceived to be too theoretical (Anthony, 1986) and the academic pedagogy is too weak to develop capable managers with the ability to face challenges of the changing environment (Mintzberg, 1992).

A research finding showed that newly graduated professionals were likely to become proficient in technical skills rather than management skills (McEvery & Blanchard, 1999). As such, to deliver future employees with strong problem-solving and decision-making skills to the workplace, we must adopt an educational process that improves and cultivates these abilities (Chapman & Sorge, 1999). In an attempt to improve students' decision-making and analytic abilities, some business educators have turned to computer-based simulations (Alpert, 1993). This is an opportune decision at the right time and business educators struggle to gain respect for an acceptance of educational games and simulations (Saunders, 1997). At the Faculty of Economics and Business, Universiti Kebangsaan Malaysia (UKM), since the 1990s, the faculty has integrated business simulation as part and parcel of the strategic management courseware.

2.0   LITERATURE REVIEW

2.1   The Effectiveness of Business Simulation

Researchers investigating the effectiveness of simulations in business education has produced contradictory and inconclusive findings (Klein, 1984). Brenenstahl (1975) found a positive but no significant difference in learning by an experiential learning group using a combination of lecture and business simulation compared to the control group which uses lecture only. Klein (1984) found that simulations were recognized as excellent motivators and as providers of valid decision-

making experiences, and play a supportive role adding decision-making relevance to the lectures and text. His study on international business simulation showed that the adoption of an international business simulation will add relevancy and provide an opportunity to exercise the skills and the knowledge acquired.

Cadotte (1995) found several skills are practiced in business simulations, such as strategic planning and thinking, management strategy, leadership, teamwork and interpersonal skills, budgeting, and cash flow management, and understanding and delivering customer value. From the research of Kolb and Lewis (1986), simulations are moderately effective for developing perceptual and symbolic abilities. Similar findings by Solomon (1993) proved that simulation allowed experience to be gained in handling new situations, stimulated discussion of complicated topics, and promoted decision-making. In a study by Faria and Dickinson (1994) on Sales Management Simulation (SMS), all participants agreed that they would like to participate in the simulation competition again, felt that they learned more by having to make decisions in the competition, felt that the SMS competition was very realistic, and all agreed that it would be worthwhile for any experienced sales manager.

The findings of Chapman and Sorge (1999) showed that simulation made the courseware more interesting, helped students apply their lessons in class, and overall, it was a useful learning tool and students strongly endorsed using simulation for future class. Wolfe and Chanin (1993) presented findings that complex games would teach more than simple games, group play generated higher learning than single member play, and self-assigned teams did not outperform randomly assigned teams. Another study by Wolfe and Luethge (2003) found that knowledgeable group (cohesive and engaged) who implemented their strategies perfectly, obtained superior results than uninvolved and copycat groups.

Despite its advantages, certain Business Simulations cannot offer realistic simulations of a corporate financial environment (Cliggort & Goodman, 1986). One of the biggest weakness of business simulation was the inability to replicate the decision-making environment (Wolfe, 1976), conditions and forces operating in a real business world (Thorne, 1992), and the behavior of learners are tied to a set of decisions that may not reflect reality (Cadotte, 1995). Saunders (1997) made further comment that the problems in business simulations were usually clearly defined and well structured, confusing, loss of learner confidence, self-

esteem and time consuming. The debates have gone further when some professors argued what percentage of a course grade a simulation should be worth (Anderson & Lawton, 1992; Alpert, 1993).

2.2 The Influence of Demographic Factors

The demographic factors have some influences on students thinking, perception and action. A study on 309 students who were 30.1% male and 69.9% female was conducted by Mohd. Hizam and Nor Liza (2004) on the influence of demographic factors on case analysis method had shown no significant in terms of gender, but there were some significance in terms of academic performance, academic major, and academic qualification. In the same study, they found that students with good performance (C.G.P.A. greater than 2.99) were more realized on the effectiveness of case analysis method than moderate performance (C.G.P.A lesser than 3.00). They also found that regarding academic qualification, diploma and HSC students had less agreed that case studies helped them in knowing international organization and the importance of case presentation than matriculation students. A study had been conducted to measure the diversity issues in business simulation (Mohd. Hizam, 2002). A total of 350 students were surveyed where 69.2% were female and 30.2% were male. He found no significant results obtained from gender, C.G.P.A., Malay students versus Chinese, students and academic qualification factors.

Two years previously, Mohd. Hizam, Nor Liza, and Abdullah Sanussi (2000) had studied the effectiveness level of business simulation in strategic management course. They surveyed 216 students who were 36.2% male and 63.8% female. They found that male students had agreed more on the effectiveness of working with business reports and financial information than female students (Sig=0.040) and Chinese students had agreed more on the effectiveness of analysis on industry and competition than other races (Sig=0.002). On the other hand, in terms of academic qualification, matriculation and HSC students had agreed more on the effectiveness of working with business reports and financial information than diploma students (Sig=0.011). Furthermore, their study showed that Chinese students have better performance in business simulation than other races and better C.G.P.A. would lead students to get better performance in simulations. They also found that matriculation students and HSC students have better performance than diploma students, even though they found that C.G.P.A. has no influence on the simulation effectiveness.

3.0   RESEARCH OBJECTIVE AND METHODOLOGY

3.1   Objective

This research had sought to explore the influence of demographic factors on the effectiveness of business simulation in terms of gender, race, academic qualification, academic program, C.G.P.A., English language capability, business simulation performance, ambition, and working experience factors.

3.2   Methodology

In a strategic management course at the Faculty of Economics and Business, UKM, the business simulation carried 25% of the overall course assessment. Students would build up their own group (company), form 3 to 6 members per group, subjected to the size of the class.   The "Business Strategy Game: A Global Industry Simulation" which was created by Arthur A. Thompson Junior and Gregory J. Stappenbeck (Thompson & Stappenbeck, 2001) has been used to help the lecturer to achieve the course objectives. A questionnaire was designed and had contained four sections, and was subjected to testing in a pilot study. Ten students had been chosen to answer the pilot questionnaire. The questions related to the effectiveness factor were phrased as statements with the possible response continuum linked to a five-point Likert scale-style, requesting the respondents to indicate one of five possible reactions to each statement (1 = strongly not effective/strongly disagree, 5 = strongly effective/strongly agree).

Ten statements had been constructed to reflect the effectiveness of business simulation were: (i) working with business report and financial report; (ii) building the skills of industry analysis; (iii) integrating functional activities to make strategic decision; (iv) thinking strategically about company and the future; (v) developing an effective tool to help students understand; (vi) developing strategy and making changes when necessary; (vii) learning how to implement strategic action; (vii) developing skills of assessing the trade-off between short term and company's long-term position; (ix) developing a medium to apply the knowledge learned in lecture hall; and (x) helping students to have better understanding about the operation of business entity. The reliability coefficient for all these items was 0.8741. The Statistical Program For Social Science (SPSS) was used to calculate all necessary statistics. A total of 165 respondents (students) from the strategic management course had answered the questionnaires.

Table 1: Demographic profile of respondents

Demographic Characteristics	Subgroup	Percentage (%)
Gender	Male	23.5
	Female	76.5
Race	Malay	30.2
	Chinese	57.9
	India	8.2
	Others	3.8
Academic qualification	Matriculation	27.3
	HSC	64.4
	Diploma	7.5
	Special case	0.6
Academic programme	Business Program	65.6
	Accounting Program	34.4
C.G.P.A	2.00 – 2.49	3.1
	2.50 – 2.99	26.9
	3.00 – 3.66	63.75
	> 3.66	6.25
English language capability	Excellent	10.3
	Moderate	62.4
	Weak	27.3
Simulation performance	Higher performance	35.8
	Middle performance	35.8
	Lower performance	28.5
Career ambition	Government sector	15.9
	Private sector	57.9
	NGO sector	1.8
	Self-employed	24.4
Working experience	Industrial training only	53.5
	Have other working experience	46.5

4.0   FINDINGS AND DISCUSSION

4.1   Sample

Table 1 exhibits the demographic profiles for the survey respondents. A common pattern of the public university student population in Malaysia is reflected in this study sample where the female students outnumbered their male counterpart by a significantly large margin. The majority of the sample (76.5%) were female, while these were Chinese students (57.9%), 30.2% were Malays, 8.2 % were Indians, and 3.8% from other races. Then, the majority of the respondents have a background from HSC (64.4%) with 65.6% of them being business students, and 34.4% were accounting students. In terms of C.G.P.A., 30% of the respondents obtained C.G.P.A. between 2.00 to 2.99, and 70% of them were the second upper and first class students. Also, most of the respondents (62.4%) thought their English was moderate, and the majority of them also had higher and middle performance in simulation.

In terms of career ambition, the majority of the respondents (57.9%) preferred to work with the private sector, followed by government sector (15.9%), and 24.4% wanted to be self-employed. Finally, work experience was included as one of the demographic profiles of respondents. Since the course would be taken in the final semester of the programme structure, all students had attended two months industrial training before entering the final year. Table 1 shows that majority of the students (53.5%) have attended industrial training while the balance (46.5%) have other work experience such as being involved in part-time jobs during semester break, working while studying, or being involved in family business. Due to the limitation of space, only significant variables are highlighted in this paper.

4.2   Results

Generally, the study on the same simulation and sample showed that business simulation was exceptionally a worthwhile tool to be integrated in class with an average mean of 3.746 (Mohd. Hizam & Md. Daud, 2005). To answer the research objective, the T-test was used to measure the influence of gender factor on the effectiveness of business simulation. Out of ten statements, five variables were found significant. It is clear in that male students have better perception on the effectiveness of business simulation than female students. As stated in Table 2, male students agreed more in the aspect of (i) working with business

report and financial report; (ii) thinking strategically about company and the future; (iii) developing strategy and making changes when necessary, (iv) implementing strategic action; and (v) assessing the trade-off between short-term profit and company's long term position.

Table 2: Differences between male and female students

Aspect	Mean		T value	Sig.
	Male	Female		
1. Working with business report and financial report	3.95	3.67	2.215	0.028**
2. Thinking strategically about company and the future	4.37	3.89	3.182	0.002*
3. Developing strategy and making changes when necessary	4.21	3.90	2.127	0.035**
4. Implementing strategic action	4.00	3.67	2.197	0.029**
5. Assessing the trade-off between short-term profit and company's long-term position.	3.76	3.49	1.870	0.063**

*Significant at 99%; **Significant at 95%

As the number of other races is not big enough, a comparison between Malay and Chinese students was carried out. Three variables in Table 3 show the differences between Malay and Chinese students. As can be observed, Malay students have better perception on the effectiveness of business simulation than Chinese students.

Table 3: Differences between malay and chinese students

Aspect	Mean		T value	Sig.
	Malay	Chinese		
1. Working with business report and financial report	3.90	3.65	2.052	0.042**
2. Apply the knowledge learned in lecture	4.08	3.75	2.541	0.012**
3. Have better understanding of business entity	4.42	4.09	2.232	0.027**

**Significant at 95%

The next objective was to determine the influence of academic qualification factor on the effectiveness of business simulation. As the number of diploma holders and special case is very small, a comparison between matriculation and HSC students was conducted. The results in Table 4 show some differences between the two backgrounds. The matriculation students have better perception on the effectiveness of business simulation than HSC students in three aspects.

Table 4: Differences between matriculation and HSC students

Aspect	Mean		T value	Sig.
	Matric	HSC		
1. Working with business report and financial report	3.91	3.65	2.062	0.041**
2. Apply the knowledge learned in lecture	4.05	3.73	2.452	0.015**
3. Have better understanding of business entity	4.39	4.05	2.237	0.027**

**Significant at 95%

Next is to explore the influence of academic programme factor on the effectiveness of business simulation. As the structure, approach, and focus of business and accounting programmes are quite different, the comparison has proved the existence of differences between the two programmes. As stated in Table 5, three variables showed that accounting students have agreed more on the effectiveness of business simulation.

Table 5: Differences between business and accounting students

Aspect	Mean		T value	Sig.
	BBA	Acct		
1. Working with business report and financial report	3.64	3.95	-2.761	0.006*
2. Apply the knowledge learned in lecture	3.72	4.07	-2.991	0.003*
3. Have better understanding of business entity	4.08	4.42	-2.531	0.012**

*Significant at 99%; **Significant at 95%

To next issue is to explore the influence of C.G.P.A. factor on the effectiveness of business simulation. The ANOVA test was conducted and proved there was no influence of C.G.P.A. on the effectiveness of business simulation. Then, another ANOVA test was conducted to find the influence of English language capability and business simulation performance on business simulation effectiveness. We found no influence of English language capability and business simulation performance on the business simulation effectiveness.

The second last objective is to explore the influence of career ambition factor on the effectiveness of business simulation. A T-test was conducted between the government sector, private sector, and self-employment. Some differences were found between students who prefer to work in the government sector, with private sector and between the government sector, and self-employment but no difference between private sector and self-employment (see Table 6). It seems that those students who prefer to work in the government sector have agreed more on the aspect of having better understanding of business entity than students who prefer to work in the private sector. On the other hand, those students who prefer to be self-employed have agreed more on the aspect of developing strategy and making changes when necessary than students who prefer to work in the government sector.

Table 6: Differences between career ambition

Aspect	Mean		T value	Sig.
	Government	Private		
1. Have better understanding of business entity	4.58	4.06	2.763	0.007*
	Government	Self- Employment	T value	Sig.
2. Developing strategy and making changes when necessary	3.73	4.10	-1.753	0.084**

*Significant at 99%; **Significant at 95%

Our last objective was to explore the influence of work experience factor on the effectiveness of business simulation. The t-test conducted proved no influence of students' working experience on business simulation effectiveness.

4.3 Discussion

The gender results support and align with the findings by Mohd. Hizam et al. (2000) that gender has an influence on the effectiveness of business simulation but contradict to the findings by Mohd. Hizam and Nor Liza (2004) and Mohd. Hizam (2002). In this study, the differences between male and female students are broader when five variables are significant compared to one variable in a study done in 2000. A different objective might be one of the reasons, but the objective of this study and the study in 2002 is the same. In terms of race, this study supports the findings by Mohd. Hizam et al. (2000) that race has an influenced on the effectiveness of business simulation as the number of significant variables is higher (three compared to one) but contradict the findings by Mohd. Hizam (2002) that suggested Chinese students have agreed more on the effectiveness of business simulation than Malay students. The different cohort might have different values that influenced their perception.

From the academic qualification factor, this study supports the findings by Mohd. Hizam and Nor Liza (2004) and Mohd. Hizam et al. (2000), but contradict the findings by Mohd. Hizam (2002). The matriculation students have better perception on the effectiveness of business simulation compared to the HSC students in three variables. These results look similar with the race results and cross tabulation technique which showed that 95.2% of matriculation students were Malays and 84.3% of HSC students were Chinese.

In terms of academic programme, three variables show that accounting students have better acknowledgement on the business simulation effectiveness. Most likely, the curriculum approach, the career focus, and the teaching process have made the students differ. The C.G.P.A. has no influence on the business simulation effectiveness and this result is aligned with the studies by Mohd. Hizam (2002) and Mohd. Hizam et al. (2000), but contradict with the study by Mohd. Hizam and Nor Liza (2004). The difference might exist because the study by Mohd. Hizam and Nor Liza (2004) was focused on case study analysis but the other studies (Mohd. Hizam, 2002; Mohd. Hizam et al., 2000) were focused on business simulation.

As the government has emphasized a lot on English language skills, we tried to analyze whether English language capability has an influence on the business simulation effectiveness. Furthermore, business simulation was conducted in English and the student's manual was also prepared in English. It is pleasant to observe that English language capability does not influence the business simulation effectiveness. Then, we thought the student performance in the simulation would influence their thought on business simulation effectiveness. However, our study shows that simulation performance has not influenced the business simulation effectiveness. On the career ambition factor, two significant variables appeared. It seems that those students who prefer to work in the government sector have better acknowledgement in the aspect of having better understanding of business entity than students who prefer to work in the private sector. However, those students who prefer to be self-employed have agreed more on the aspect of developing strategy and making changes when necessary than students who prefer to work in the government sector. It seems that student expectation, in this case, career ambition, have an influence on their perception and action. Lastly, the study found that working experience has not influenced the business simulation effectiveness.

5.0   CONCLUSION

From this study, we find that students' C.G.P.A., simulation performance, English language capability, and work experience have no influence on the business simulation effectiveness. It means that the voluntary forming of simulation group that has been practising would not influence the simulation effectiveness and the usage of English simulation could be continued. It is good also to observe that students' assessment on the business simulation is not influenced by their performance and C.G.P.A. Five factors that influenced the simulation effectiveness were gender, race, academic qualification, academic programme and career ambition. It shows that students' traditional background before joined UKM (gender and race) still have an influence on their perception. Although the academic qualification factor seems to influence the simulation effectiveness, the truth is, that factor is highly influenced by the race factor.

Then, we found that education process has made the students more focused on their fields and differ with others. It is not an issue to have different students as long as the education objectives have been achieved. Next, we found that career ambition has influenced students' thought on simulation effectiveness. It is interesting to see that difference in jobs favored and expectation would

influence students' perception on business simulation. In conclusion, this study has proven that students' background, expectation, and academic programme would influence the business simulation effectiveness. We believe this paper has contributed several important findings in terms of the influence of demographic factors on non-traditional teaching methods such as business simulation. In future, a longitudinal study with bigger and better sampling would enable us to enhance the findings.

REFERENCES

Alpert, F. (1993). Large-scale simulation in marketing education. *Journal of Marketing Education, 15*(2), 30-35.

Anderson, P. H. & Lawton, L. (1992). A survey of methods used for evaluating student performance on business simulations. *Simulations And Gaming, 23*(4), 490-498.

Anthony, P. (1986). *The foundation of management.* London: Tavistock.

Behrman, J. N. & Levin, R. I. (1984). Are business schools doing their job? *Harvard Business Review, 62*(1), 140-147.

Brenenstahl, D. C. (1975). An experiential study of performance in a basic management game. *ABSEL Proceedings: Second Annual Symposium, 32-39.*

Cadotte, E. R. (1995). Business simulations: the next step in management training. *Selections, 54*(2), 8-16.

Chapman, K. J. & Sorge, C. L. (1999). Can a simulation help achieve course objective? An exploratory study investigating differences among instructional tools. *Journal of Education for Business, 74*(4), 225-230.

Cliggort, D. & Goodman, H. (1986). How to succeed in business simulation games? *Across The Board, 23*(9), 65-67.

Faria, A. J. & Dickinson, J. R. (1994). Simulation game for sales management training. *The Journal of Management Development, 13*(1), 47-59.

Klein, R. D. (1984). Adding international business to the core program via the simulation game. *Journal of International Business Studies*, Spring/ Summer, 151-159.

Kolb, D. A. & Lewis, L. H. (1986). Facilitating experiential learning: observations and reflections In Lewis, L.H. (Ed) *Experiential And Simulation Techniques For Teaching Adults* (pp. 99-107). San Francisco: Jossey-Bass.

McEvery, J. M. & Blanchard, P. N. (1999). Validity Of Multiple ratings Of Business Student Performance in a management simulation. *Human Resource Development Quarterly, 10*(2), 155-172.

Mintzberg, H. (1992). Debate. *Harvard Business Review,* Nov/Dec, 129.

Mohd. Hizam, H. (2002). Business simulation in strategic management course: effectiveness and diversity issues. In C.M. Wang, K.P. Mohanan, & D. Pan, (Eds). *Proceedings of the Second Symposium on Teaching And Learning In Higher Education.* Singapore: National University of Singapore, pp. 146-151.

Mohd. Hizam, H. & Md. Daud, I. (2005). The application of business simulation in strategic management course. *Proceedings of The 2ⁿᵈ International Symposium On E-Learning*. Kota Kinabalu: Universiti Malaysia Sabah.

Mohd. Hizam, H. & Nor Liza, A. (2004). The influence of demographic factors and effectiveness using case analysis method in teaching of business courses. *Jurnal Pendidikan, 29*, 37-50.

Mohd. Hizam, H., Nor Liza, A., & Abdullah Sanusi, O. (2002). Kepelbagaian pelajar dalam simulasi perniagaan: satu bukti empirikal. In Z. Mahamod (Ed.). *Prosiding Seminar Pendidikan Kebangsaan 2000: Kepelbagaian Pelajar: Cabaran Dan Strategi Pengajaran.* Bangi : Fakulti Pendidikan UKM, pp. 281-292

Saunders, P. M. (1997). Experiential learning, cases and simulations in business communication. *Business Communication Quarterly, 60*(1), 97-114.

Solomon, C. M. (1993). Simulation training builds teams through experience. *Personnel Journal, 72*(6), 100-107.

Thompson, A. A. & Stappenbeck, G. J. (2001). *The business strategy game: A global industry simulation.* Boston: McGraw Hill.

Thorne, J. (1992). New stimulus for those simulations. *Management Today, Dec*, 66.

Wolfe, J. (1976). Correlates and measures of the external validity of computer-cased business policy decision-making environments. *Simulation and Game, 7*, 411-438.

Wolfe, J. & Chanin, M. (1993). The integration of functional and strategies management skills in a business game learning experiment. *Simulation And Gaming, 24*(1), 34-46.

Wolfe, J. & Luethge, D. J. (2003). The impact of involvement on performance in business simulation: An examination of goosen's "know little" decision-making thesis. *Journal of Education for Business, 79*(2), 69-74.