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SIMULATION INTEGRATION CONTRASTS BETWEEN MBAs AND UNDERGRADUATES IN THE CAPSTONE POLICY COURSE

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ABSTRACT

Total enterprise simulation integration processes differ between graduate (MBA) and undergraduate (BBA) business policy students. For BBAs, simulations are one of several considerations that revolve around decision making issues. For MBAs, simulations are more central to the entire business policy course. This difference, and several others, may be attributed to a basic experience effect. That is, BBAs are more concerned with the acquisition of business policy skills, while MBAs are concentrating on the application of skills acquired in other courses and other contexts. Equally important, MBA/BBA differences provide a key to understanding how general management learning can be enhanced by working with rather than against dominant cognitive patterns. These patterns, moreover, are not affected by the simulation administration experience of senior business policy faculty.

INTRODUCTION

The primary purpose of this study is to compare graduate student (MBA) attitudes with those of undergraduates (BBA) regarding the integration of total enterprise simulations in the capstone business policy course. A related but secondary purpose is to determine whether or not these attitudes are affected by simulation experience differences among otherwise senior policy faculty.

A previous study with undergraduates (Patz, 1988) Indicates that policy simulations have a positive relationship with student attitudes toward the capstone course in addition to, and independent of, the basic course content. Equally important, even though simulations and content are independently related to student satisfaction both are positively related with specific course emphases on general management decision making. Moreover, an emphasis on general management decision making has positive acceptability relationships with the amount and difficulty of quantitative analyses included in the course.

General Hypotheses

These relationships, derived from a large BRA sample (N=90) , form a general simulation integration model that is the foundation for one set of MBA/BBA comparisons. This model will he discussed after a few more terms have been defined.

For example, this study and the previous one rest on the assumption that effective business policy courses are designed around content and activities that kindle an interest in general management. Particular pedagogical tools, such as simulations, may enhance the degree to which students understand or learn a specific set of general management concepts. But, if they do not increase student interest, then overall learning will suffer.

There are several well-known theoretical bases for this assumption that increased student interest enhances overall learning (Secord & Backman, 1914), but the key issue for this research program is whether or not total enterprise simulations and student interest in business policy issues are related. Furthermore, several tests of student interest are required if any credibility is to be assigned to empirically derived relationships.

The interest measures in this study, as before, are each student's anonymous personal choices. AB shown in Figure 1, three dependent variables measure the student's likelihood of choosing the capstone policy

Figure 1. Abbreviated course design questionnaire.

For each of the following course issues--activities, content, and choice--indicate your preference by circling one of the numbers on each seven point scale.

Course Activities

(SIMDIF)Simulation

1	2	3	4	5	6	7
Less Difficult			Same Level			More Difficult

(SIMEMP)Simulation

1	2	3	4	5	6	7
Less Emphasis			Same Level			More Emphasis

Course Content

(CUREMP) Current Emphases

1	2	3	4	5	6	7
Not Good			So-So			Very Good

(DECMKG) Decision Making

1	2	3	4	5	6	7
Less Emphasis			Same Level			More Emphasis

(QNTEMP)Quantitative Analysis

1	2	3	4	5	6	7
Less Emphasis			Same Level			More Emphasis

(QNTDIF)Quantitative Analysis

1	2	3	4	5	6	7
Less Difficult			Same Level			More Difficult

Course Choice

(Dependent Variables--Not So Indicated on Questionnaire)

(CBKALT) If this course were not required but would be one of several, then completion of which would satisfy the general management knowledge requirements for the MBA, I would;

1	2	3	4	5	6	7
Definitely Maybe			Definitely Avoid It Take It			Take It (ELECTV)

If this course were an elective, one of several that could be used to satisfy a departmental major or area of emphasis requirement, I would:

1	2	3	4	5	6	7
Definitely Maybe			Definitely Avoid It Take It			Take It (ISSMAN)

If this course were required but devoted to general issues in management rather than general management Issues, would:

1	2	3	4	5	6	7
Be Very Displeased			Not Care			Be Very Pleased

course if it were not required, if it were an elective, and if the content were changed from general management issues to general issues in management. The "not-required" designation means that is would be one of several policy type courses that would satisfy the American Association of Collegiate Schools of Business (AACSB) common body of knowledge (CBK) requirements. Likewise, the "elective" designation means that the course would be independent of CBK requirements but could be used to satisfy some departmental major or other area of emphasis requirement. The third or "general-issues-in-management" rather than "general-management-issues" question focuses on the desirability of a fundamental change in the capstone course content.

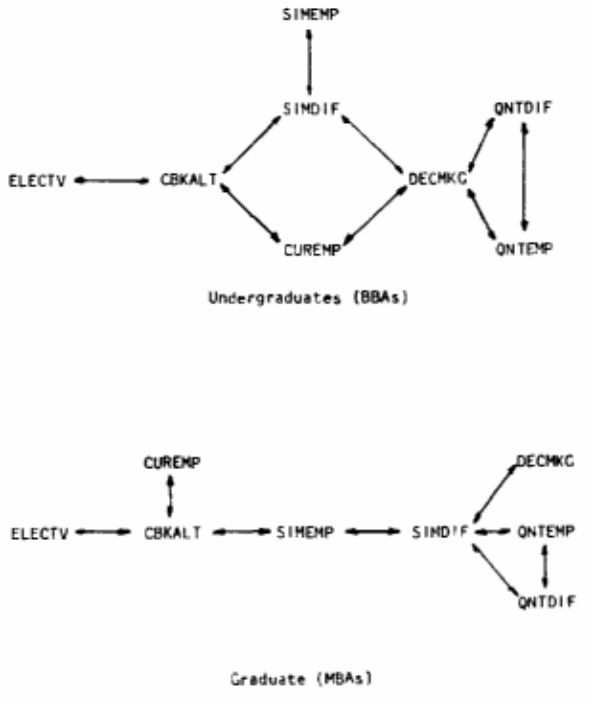
These measures are anonymous; that is, they can be connected only to a student's other responses to the questions in Figure 1, not to the specific respondent. Moreover, the measures were taken near the end of the required MBA policy course. In other words, the students were familiar with the course content before being asked to make their choices.

Based upon these general considerations, two main hypotheses are considered in this study. The test results for these same hypotheses using the BBA sample are shown in parentheses.

H1: Students who prefer more difficult simulations would be more likely to choose a "not- required" or "elective" policy course. (Accept)

H2: Students who prefer a greater emphasis on simulations would be more likely to choose a "not-required" or "elective" policy course. (Reject)

Figure 2. Simulation integration



Also, now that Figure 1 has been introduced, the variable names for each question can be related to the undergraduate simulation integration model shown in the upper portion of Figure 2. The only variable missing in this model is ISSMAN, representing the "general-issues-in-management" question. It did not have any significant correlations with the other eight variables in the BBA sample. As will be noted, this result is repeated in the MBA sample. Nevertheless, all the BBA correlations in Figure 2, represented by the bi-directional arrows, are positive and statistically significant. This pattern among the variables is the other general test to be conducted using the MBA data. The question is: Do MBAs integrate simulation activities with other policy course content in a fashion similar to BBAs?

Specific Hypotheses

Several more specific hypotheses can be and were stated for the BBA sample by relying upon two well- known phenomena. One is the standard social psychological finding that people are more comfortable in familiar rather than unfamiliar problem solving circumstances (Shaw, 1981). The other is a common finding among policy instructors that graduates with a few years of actual business experience express a much greater satisfaction with the policy course, in retrospect, that they had as students.

Formally, in terms of hypotheses with BBA sample results shown in parentheses, these statements translate to:

H3: Students who prefer either less difficult simulations or a diminished emphasis of them have a higher preference for a course devoted to general issues in management rather than general management issues. (Reject)

H4: Compared to a required policy course, students prefer a general issues in management course to a general management issues course. (Accept)

H5: Compared to either a "not-required" or an "elective" policy course, students prefer a general issues in management to genera management issues course. (Accept)

H6: Higher preferences for a general issues in management course are associated with lower preferences for emphases on general management decision making and quantitative analyses. (Reject)

H7: Higher preferences for a general issues in management course are associated with a lower preference for either a "not-required" or "elective" policy course. (Reject)

This Last hypothesis is complementary to but different from H5. That is, It is entirely possible for students to prefer a general issues in management course without having such a preference related in any way to a "not-required' or "elective" general management Issues course choice.

METHOD

A 22-item questionnaire was administered to 200 MBAs registered in seven sections of the CBK-type policy course required during the second year of the graduate curriculum. The questionnaire is part of a continuing effort to improve the course, and the nine items reproduced in Figure 1 pertain to this study on integrating simulations. Neither the item symbols, such as SIMDIF for the simulation difficulty question, nor the dependent variable designations appeared on the firms that were used.

All 200 students participated in a simulation (Scott & Strickland, 1985), and they completed the questionnaire within a two-week period just prior to the end of the semester. In brief, the students were familiar with the course and all simulation exercises were completed before the questionnaire was administered. -

After discarding 12 incomplete questionnaires and selecting a random but proportional sample of 162 from the 188 that remained, a mixed design was constructed with two between subject variables and one repeated measure (Myers, 1972). The first between variable is the actual hands-on simulation administration experience of three otherwise senior business policy instructors. The levels of this variable are Low, less than 2 years; Medium, more than 2 but less than 5 years; and High, more than 5 years of total enterprise simulation experience.

The second between variable is a control for possible major field of study effects. Each instructor experience level is divided into three groups denoted as follows: (a) DSM for Decision Systems and Management majors, (b) FBE for Finance and Business Economics majors, and (c) MAR for marketing majors.

These designations of between subject variables resulted in proportional design with a frequency split of 81, 54, and 27 subjects for the High, Medium, and Low experience levels respectively. Furthermore, within each experience level there were 2.5 times as many FBE as either DSM or MAR majors. The split within the High experience level was 18/45/18 for DSM/FBE/MAR; similarly, the Medium and Low splits were 12/30/12 and 6/15/6 respectively.

The nine questions, of course, comprise the repeated measure or within subjects variable. In short, this MBA sample (N=162) is 1.8 times as large as the BBA sample (N=90) , and it allows a test of instructor experience that was not possible in the previous study.

RESULTS

Analysis of variance results are shown in Table 1. Only the main within subjects effect, Questions, is significant. Instructor Experience, Department Major, and none of the interactions are statistically significant. The fact that Department Major is not significant repeats the BRA result, but the absence of Instructor effects is surprising. It suggests that simulations are "instructor-proof" when administered by senior faculty.

Both the simple and multiple correlation analyses in Table 2 indicate several significant results. More important, they form an MBA pattern, shown in the lower portion of Figure 2, that has some interesting contrasts with the BBA pattern. For now, as with the BRA results, simply note that ISSMAN, the question concerned with general issues in management as opposed to general management issues, does not have any significant correlations.

Hypothesis Testing

Of the two general hypotheses, H2 is partially confirmed but H1 is not. Referring to Table 2, SIMEMP has a positive correlation only with CBKALT but not with ELECTV, thus, the partial confirmation of H2. SIMDIF, however, has no significant correlations with any of the three dependent variables, even though it has a significant positive correlation with SIMEMP. In short, MBAs who prefer a greater emphasis on simulations would be more likely to choose a not-required policy course, but the effect of more difficult simulations is inconclusive.

This is a reversal of the BBA results using a less difficult simulation (Keys & Leftwich, 1985). The undergraduates exhibited significant positive correlations between SIMDIF and both CBKALT and ELECTV while the SIMEMP correlations were inconclusive.

Table 1

Overall MBA Questionnaire Results and MBA/BRA Comparisons

Analysis of Variance			
Source	df	MS	F
Between Subjects			
Instructor	2	1.721	.429
Major	2	4.629	1.153
Instructor Major	4	1.429	.356
Subject/Instructor Major	15	4.016	
Within Subjects			
Questions	8	14.063	7.778***
Instructor Questions	16	2.131	1.79
Major Questions	16	1 .900	1 31
Instructor Major Questions	32	1.261	.697
Subject Questions/ Instructor Major	1224	1.808	

Item Analysis			
Question Means	MBA	BBA	MBA BBA
SIMDIF	4.179	4.311	-.132
SIMEMP	3.883	3.922	-.039
CUREMP	4.370	4.344	.026
DECMKG	4.944**	4.879*	.065
QNTEMP	4.198	4.011	.187
QNTDIF	4.204	4.022	.182
CBKALT	4.377	3.600*	.777**
ELECTV	1.105	3.744	.361*
ISSMAN	4.117	4.767*	-.650**
Error	.106	.125	.170

Note. BRA data are from "Integrating Simulations: A Model for Business Policy Success' by A. L. Patz, 1988, Developments in Business Simulation and Experiential Exercises, 15, p. 17. Copyright 1988 by the Association for Business Simulation and Experiential Learning. The comparison score for each MBA or BBA question is the average of the eight other MBA or BBA scores respectively.

*p < .05. **p < .001. ***p < .00001.

Table 2

Item Relationships

Simple Correlations

	SIMEMP	CUREMP	DECMKG	QNTEMP	QNTDIF	CBKALT	ELECTV	ISSMAN
SIMDIF	.485***	-.063	.234**	.169*	.258*	.104	.075	-.080
SIMEMP		-.027	.133	.031	.108	.177*	.124	-.007
CUREMP			-.015	-.063	-.125	.485***	.509***	-.134
DECMKG				.110	.045	.146	.124	-.085
QNTEMP					.725***	.111	.121	-.105
QNTDIF						.050	.041	-.087
CBKALT							.880***	-.131
ELECTV								-.117

Multiple Correlations

	CBKALT		ELECTV	
	Beta	t	Beta	t
SIMDIF	.006	.074	.007	.090
SIMEMP	.170	2.206*	.120	1.564
CUREMP	.500	7.386***	.521	7.747***
DECMKG	.116	1.670	.098	1.417
QNTEMP	.128	1.297	.158	1.612
QNTDIF	- .005	.048	-.027	-.267
R^2	.304		.311	
F	11.285***		11.662***	
SIMEMP	.191	2.822**	.138	2.046*
CUREMP	.490	7.245***	.513	7.615***
R^2	.272		.278	
F	29.687***		30.684***	

*p < .05. **p < .01. ***p < .001.

Consistent with the BBA results, ISSMAN's lack of correlations with anything leads to a rejection of hypotheses H3, H6, and H7. Any preference for a general Issues in management course is not related to anything else. This includes all the hypothesized relationships with simulation difficulty (SIMDIF), simulation emphasis (SIMEMP), emphases on general management decision making (DECMKG) and quantitative analyses (QNTEMP), quantitative analysis difficulty (QNTDIF), and the not-required or elective policy course choices (CBKALT and ELECTV).

But, once again In contrast with the BBAs, the mean ISSMAN score is lower than the CUREMP and CBKALT means and only slightly higher than the ELECTV mean. Therefore, H4 and H5 are rejected. MBAs do not express a preference for a general issues in management course.

Key MBA/BBA Contrasts

Closer examination of the item analyses in Table 1 indicates that MBAs, like BBAs, have a marked interest in decision making. However, they exhibit a significantly higher interest in the capstone course as shown by the MBA BBA differences for CBKALT and ELECTV. Likewise, parallel to the rejection of H4 and H5, MBA interest in a general issues in management course is significantly lower as shown by the MBA BRA difference for ISSMAN. Expected MBA preferences for SIMDIF and SIMEMP, using past experience as a guide (Patz, 1987), are not apparent. In fact, with the more difficult simulation, MBA preferences regarding simulation difficulty and emphasis are slightly but not significantly lower than BBAs.

This point will be noted again in the next section, but its discussion depends upon a second set of key MBA/BBA differences. These are the item relationships summarized for the MBAs in Table 2 and contrasted with the BBAs in Figure 2.

For example, the simple correlations in Table 2 indicate that both SIMEMP and CUREMP are correlated with CBKALT while only CUREMP correlates with ELECTV. The multiple correlations, using six explanatory variables, confirm these findings, and the ones with two explanatory variables (SIMEMP and CUREMP) force the addition of a significant relationship between SIMEMP and ELECTV. In this sense, general hypothesis H2 can be totally rather than partially confirmed. However, this forcing of significance leads to a 3% loss in explained 2 variance as shown by the multiple correlation R scores.

Nevertheless, SIMEMP and CUREMP are independent influences since they are not correlated. Conversely, the choice of a not-required or elective policy course can be considered equivalent due to the high correlation between CBKALT and ELECTV, r =.88.

These relationships, along with the other significant correlations, are shown in the lower portion of Figure 2. In fact, like its BRA counterpart, all the correlations indicated by bi-directional arrows in the MBA model are positive. CUREMP and SIMEMP are independently related to CBKALT, and CBKALT has a positive relationship with ELECTV. Likewise, SIMEMP has a positive relationship with SIMDIF, and the remaining positive relationships with DECMKG, QNTEMP, and QNTDIF are also indicated.

DISCUSSION

Overall, there are two important differences between MBAs and BBAs in these studies. First, MBAs are more concerned with general management than BBAs. The CBKALT, ELECTV, and ISSMAN differences are definitive.

Second, MBAs and BBAs Integrate simulations in quite different fashions. For the BBAs, as noted in the top diagram of Figure 2, simulations are just one of several considerations that revolve around decision making (DECMKG) issues. On the other hand, simulations are central for MBAs. They (SIMDIF and SIMEMP) mediate decision and quantitative concerns (DECMKG/QNTEMP/ QNTDIF) with attitudes toward the capstone course (CBKALT/ELECTV).

In other words, the more effusive word-of-mouth expressions of simulation satisfaction by MBAs (Patz, 1987) appear to reflect the pi total manner in which students cognitively incorporate these exercises more than their preferences for them. MBAs are simply more direct in their integration of capstone course and simulation content.

Perhaps this is an experience effect, a reflection of quantitative and decision skills acquired in other courses and other contexts. BBAs are usually less experienced in these matters, and experience effects on cognitive processing have been noted In other circumstances. Seasoned chess players, for example, recognize and assess alternative moves more quickly than novices, but novices tend to take a more global view (Chase & Simon, 1913).

Translated specifically to this research, an experience interpretation of the MBA/BBA model differences means that simulations are more of a skills acquisition exercise for BRAs and more skills application for MBAs. Both groups, of course, are doing both. The relative emphasis simply shifts between BBAs and MBAs, thus, the integration model differences.

This interpretation and the other theoretical issues already mentioned, of course, need further study. For example, another view of the models in Figure 2 is that they represent the cognitive processes by which two different groups assimilate relatively common material. They are mental maps of the way people learn (Newell & Simon, 1972), maps that can be discerned through the use of simulation research (Patz, in press).

A key reason for investigating such maps, of course, is given at the beginning of the this paper. That is, the main reason for teaching the capstone course is to impart some knowledge of general management, and this task will be done more efficiently with interested rather than disinterested students. Some degree of Interest, therefore, is important, and presumably it can be aroused by working with rather than against learning maps.

In this case, assuming that the experience interpretation holds under further scrutiny, this would mean that simulation exercises would focus on skills acquisition for BBAs. The center of attention would shift to skills applications for MBAs. As already noted, both would be important. Only the relative emphasis would change.

In any case, all of these findings are important for practical pedagogical purposes. In the MBA or BBA classroom, it is clear that course choice variables, such as CBKALT and ELECTV, are influenced one way or another by simulation (SIMDIF/SIMEMP) as well as content (CUREMP/DECMKG/QNTEMP/QNTDIF) variables. At a minimum, as shown by the correlations, these influences are positive. Moreover, at least with this sample, the simulation influences are not affected by simulation experience differences among senior faculty.

Therefore, capstone lectures, discussions, and cases need to include a focus on the types of decisions important in simulations. Otherwise, the desired integration, indicated in Figure 2 by the customer, will be difficult to achieve and enhance.

Industry and company demand forecasts, production capacity and scheduling, operating and cash budgets, profit planning, and debt/equity financing, for example, are specific topics that need to be emphasized. Group organization, management, and culture as they relate to the decision making process are other important topics. The point is that a small investment in simulation and course content integration has large student interest and learning payoffs.

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