

# Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

## A COMPARISON OF PERFORMANCE, ATTITUDES, AND BEHAVIORS OF MBA AND BBA STUDENTS IN A SIMULATION ENVIRONMENT: A PRELIMINARY INVESTIGATION

Masoud Hemasi, Illinois State University  
Lee A. Graf, Illinois State University  
Calvin E. Kellogg, Illinois State University

### ABSTRACT

Recent debate over the value of the MBA degree is presented. Differences between MBA and BBA students are hypothesized and subsequently examined (in a simulated environment) through a series of comparable objective performance, behavioral, and attitudinal measures. While no significant difference was found between the performance of the two groups, BBA and MBA candidates were found to differ in their analytical orientation, cost consciousness, orientations toward planning, and locus of control.

### INTRODUCTION

It is estimated that in 1986 71,000 MBAs will be awarded at the more than 650 schools in the U.S. offering the degree, an almost fifteen-fold increase from 1960 when 4,814 were granted (Byrne, 1986). While the general interest by students in an MBA education appears to be remaining somewhat constant, there are indications that business' demand for MBA graduates may be waning. While the argument that the "supply of MBAs will match the demand for MBAs by late 1980s/early 1990s" provides one legitimate rationale for the diminishing demand for MBA graduates (Byrne, 1986; Bivens, 1984), MBA programs have increasingly come under fire for a variety of other reasons.

One of the more commonly cited arguments is that MBA graduates are poorly qualified due to the lack of rigor in some MBA programs; programs that opened in the 1970s to meet the increasing student demand for the MBA degree (Swartz, 1985; Waldrop, 1986). Another suggested shortcoming of MBA programs is that they create arrogant, overly aggressive, opportunistic individuals that lack the skill or desire to be team players (Tarr, 1986). The MBA's short term profitability focus rather than the more successful long-term growth focus is another identified weakness of many MBA programs and, therefore, their graduates (Gannon and Arlow, 1985). MBAs are also seen as "individualistic, number crunching automatons" with few "soft skills," the narrow-minded technician lacking in interpersonal and communication skills (Byrne, 1986; Tarr, 1986; Nussbaum and Beam, 1986; Associated Press-New York, 1986). Yet another problem is the hiring organization's disillusionment with MBAs due to the turnover or "job hopping" phenomenon frequently associated with those holding the degree (Ascher, 1986; Gannon and Arlow, 1985; DePasquale and Lange, 1971).

While all of the above are legitimate arguments for the suspected diminishing popularity of the MBA degree among prospective business employers, one final argument may go even further to explain the apparent downturn in the demand for MBA's. Hunt and Speck (1986) report that historically the MBAs' worth lay in its ability to provide a solid generalist foundation unavailable through the BBA degree. But, that today BBA programs have come of age and have begun to displace the MBA degree. They state:

...The content of the MBA and a good quality undergraduate business program are fundamentally the same.

Further support for this argument comes from Gannon and Arlow (1985). They suggest:

...it is likely that corporations will hire proportionately more individuals possessing undergraduate specialized degrees and then train them to become managers. Such an approach may help to decrease demand for MBAs with specializations, subsequent managerial turnover, and even the cost associated with hiring and retraining managers.

To assess whether these perceptions are correct, whether a difference between BBAs and MBAs actually exists, Gannon and Arlow (1985) have suggested that output measures must be developed. They state:

...to legitimate or fully justify the MBA degree, it seems necessary to develop some output measures ... whatever else happens, business schools must focus on measuring output, for otherwise the mystique of the MBA degree may well decline significantly, and the MBA degree go the way of many other once-popular degrees.

This is at the heart of what this paper attempts to accomplish, to determine if a difference exists between the BBA student and the MBA student through a series of comparable objective performance, behavioral, and attitudinal measures. These measures were taken from students in a large midwestern AACSB accredited business program that were registered for the required capstone policy and strategy course.

Two general propositions provide the direction for this study:

Proposition 1: There is a performance difference between BBAs and MBAs in a simulation environment.

Proposition 2: BBAs exhibit different behaviors and attitudes when compared to MBAs in a simulation environment.

### METHOD

Sample and Task:

The participants in this study were 87 undergraduate and 34 graduate business students enrolled in senior level and MBA business policy/strategic management classes in the spring and summer of 1986. The vast majority of students were in the last semester of their respective programs. A part of the student's grade in these classes was earned by participating in a computerized management game designed to simulate business decision making. Students worked

## Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

together in small groups (mostly 3-5 individuals per group) and made a variety of "quarterly" decisions (of a strategic and operative nature) that affected their company's performance. Specifically, students made decisions with respect to raw material procurement and inventory, manpower planning, production scheduling, warehousing, marketing mix, alternative sources of financing, and dividend policy. The game ran for 2 1/2 game years and therefore required each team to make 10 rounds of decisions.

Net profit, sales, return on sales, return on assets, return on equity, earnings per share, and stock price were the basic measures of company performance. Each company's performance was a result of the soundness of the groups' decisions, decisions of competitors, and chance (e.g., random worker turnover). The computer simulated the effects of each decision at the end of each quarter and provided a printout for each company. Game conditions and decision alternatives were virtually identical in the graduate and undergraduate groups. The game administrator was the same for all groups.

### Measurements and Variables:

Absolute measures of the cumulative results of all seven performance measures were arrayed and the largest value for each criteria was located. The actual performance of each group on each criteria was compared to the maximum value for the respective criteria. By dividing the actual performance by the maximum value each team received a relative performance rating from 0.00 to 1.00 within that category. The relative weights for each team on each criteria were then averaged for an overall performance weighting ranging from 0.00 to 1.00. These overall performance ratings were used for analysis purposes. Attitudes about the simulation competition were measured by asking the participants to rate (on a scale of 1 to 5) the degree of their agreement/disagreement with each item on a list of 11 statements (see Table 2). Competitive strategy was measured by asking the group members to rate (on a scale of 1 = not at all important to 5 = extremely important) the degree of importance that their group attached to each item on a list of 22 methods (see Table 3) of competing as part of their overall competitive strategy.

Analytical orientation was measured by asking the group members to indicate how frequently (1 once to 5 = never) their group used various analytical techniques from a list of 13 during the simulation competition (see Table 4). Finally, the data on the degree of challenge of various game activities was obtained by asking the participants to rate each listed activity (see Table 5) on a scale of one to five (1 extremely challenging and 5 = not challenging).

### Data Analysis:

In the interest of parsimony and to reduce the number of variables to a manageable size, factor analysis was performed on each set of items related to attitudes toward the game, competitive strategy, analytical orientation, and degree of challenge. In each case, the same steps, as outlined below, were followed to generate the underlying factors. First, principal components (with eigen values = 1) were extracted. A Screen test was used to identify the number of factors to be retained. Then, orthogonal (Varimax) rotation was performed to facilitate interpretation. The resulting factors (or subscale) with their underlying variables are presented in Tables 2-5. The score on each subscale was obtained by averaging the questionnaire ratings on Items with loadings of .50 or higher and cross loadings of .30 or smaller.

Next, one way ANOVA was employed to first test the

significance of differences between the mean performance of BBA and MBA groups. Then, mean subscale difference between the two groups were examined using one-way ANOVA.

## RESULTS AND DISCUSSION

Table 1 presents the mean performance values for the two BBA and MBA groups. Contrary to our expectation of superior MBA performance, there seems to be no significant difference between the two groups in a simulation environment. Proposition 1, therefore, is not supported by the data.

A word of caution, however, is in order. Although the simulation conditions were held virtually identical in both cases, there were observable differences between the groups that may account for the absence of the difference in performance. First, on the average, BBA groups were larger (n = 4-5) than their MBA counterparts (N = 2-3). Given the fact that groups were formed with the objective of having broad representation of all functional areas, BBA groups may have had the advantage of being relatively more diverse in functional background/expertise. An additional potential advantage for the BBA teams may have been the opportunity for more regular interaction among the group members since most BBA candidates were full-time, regular students attending classes on a daily basis. Conversely, most MBA candidates (approximately 80%) were part-time evening students holding full-time jobs. This, along with commuting problems, not only limited the interaction opportunities for most MBA participants, but also restricted their access to computers for extensive analyses of their decisions prior to submission. Verification of the above questions warrants further investigation, but is not within the scope of the present research.

**TABLE 1**  
**ANOVA ON GROUP PERFORMANCE**

	MEANS		F
	BBA	MBA	
(N)	(N)		
65.98	60.72	0.82	n.s.
Performance	(18)	(12)	

Table 2 shows the comparison of the mean values of the two subsamples with respect to attitudes in the competition. From the table, it seems as if the graduate students' perception of the instrumentality and value of planning in the competition was significantly more positive than that of the undergraduate subsample. MBA students apparently viewed decisions as an integral part of a game plan more often than the BBA students who placed a heavier weight on the element of luck and took more of a "guess work," as opposed to systematic, approach to decision making. The fact that MBAs are shown to perceive a more internal locus of control may be attributable to their older age and maturity, as well as their more extensive work experience,

Table 2 also shows mean figures for the dimensions labeled uncertainty and complexity/participation.

# Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

TABLE 2  
ANOVA ON ATTITUDES TOWARD THE SIMULATION COMPETITION

	MEANS		F
	BBA	MBA	
	(N)	(N)	
<b>Factor 1</b>			
<b>PLANNING INSTRUMENTALITY:</b>	3.62	4.10	8.70***
	(86)	(32)	
+ Planning in this simulation is not important			
+ My group gave up by the end of the semester			
+ Luck was the most important factor determining the result			
+ Nothing was gained by doing this simulation			
+ Most decisions made in our group were just guesses			
<b>Factor 2</b>			
<b>UNCERTAINTY:</b>	3.31	3.18	0.76 n.s.
	(85)	(33)	
+ My group was able to predict sales levels fairly accurately			
+ The simulation was too simple			
<b>Factor 3</b>			
<b>COMPLEXITY:</b>	3.61	3.84	2.18 n.s.
	(87)	(33)	
+ One person in my group made most decisions			
+ The simulation was much more complex than the situation most managers face			

\*\*\*  $P \leq .001$

The complexity and uncertainty dimensions of the game were perceived in similar fashion by both groups. As the perception of complexity increased, deference to individual decision making increased. Inversely, those that perceived the game to be relatively less complex had a greater tendency to take part in meeting the managerial and strategic challenges presented by the game. This phenomenon was equally present in both groups.

Examination of the competitive strategies utilized by BBAS and MBAS (Table 3) indicated that MBA groups were significantly more likely to utilize a low cost producer strategy than were BBA groups. MBA groups focused on reducing crew sizes, improving crew productivity, and general cost reduction. This finding would support the contention that MBAS are generally more bottom-line focused and may ignore the human impact of worker cutbacks, increased emphasis on productivity and the general human impact of cost reduction. However, such an emphasis may be what is required for corporate survival in today's highly competitive environment.

TABLE 3  
ANOVA ON COMPETITIVE STRATEGY

	MEANS		F
	BBA	MBA	
<b>Factor 1</b>			
<b>HIGH VOLUME/GROWTH STRATEGY:</b>	3.38	3.48	0.91 n.s.
	(84)	(26)	
+ Expansion of production capacity			
+ Maximum capacity utilization			
+ Low price			
+ Debt financing			
- High price			
- Staying small			
<b>Factor 2</b>			
<b>PRODUCT DIFFERENTIATION STRATEGY:</b>	3.22	3.36	0.71 n.s.
	(85)	(29)	
+ Local advertising			
+ National advertising			
+ Differentiation through product improvements			
+ Expansion of sales force			
- Equity financing			
<b>Factor 3</b>			
<b>LOW COST STRATEGY:</b>	3.37	3.67	4.69*
	(84)	(28)	
+ Reduce crew size			
+ Cost reduction			
+ Improve crew productivity			
+ Use of overtime in production			
+ Prediction of competitor's actions			
<b>Factor 4</b>			
<b>HARVESTING STRATEGY:</b>	3.10	3.27	1.96 n.s.
	(85)	(31)	
+ Control over working capital			
+ Maintain employee pool as hedge against turnover			
+ Minimize quarterly ending inventory			
+ Dividend payments			
+ Financial liquidity			

\*  $P \leq .05$

MBA and BBA groups did not differ in their opinion of the importance of a high volume/growth strategy, product differentiation strategy, or harvesting strategy. Both MBA and BBA groups typically placed the least emphasis on a harvesting strategy. This may be attributed to the fact that the general economy in the simulation was growth oriented. BBA students placed a slightly greater importance on a high volume/growth strategy than on a low cost producer strategy. This indicates a more balanced external/internal focus on the part of BBA groups. MBA groups, on the other hand, emphasized low cost producer strategies to a larger extent than a high volume growth strategy. This may indicate a preference for internal focus rather than a balanced approach.

# Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

As is evident from Table 4, while there was no difference among the two groups in environmental analysis (purchase of environmental information such as competitors' prices and sales), MBA groups seem to have been more sophisticated and more systematic in their decision making. They have utilized various financial and quantitative methods (such as cash flow analysis, EOQ, ratio analysis, regression analysis) more regularly and frequently than their BBA counterparts. In short, they seem to have been more analytical than intuitive in the way they confronted and coped with uncertainties involved in running their companies. This can be a function of their greater knowledge of and ability to use such techniques or/and the greater faith and trust they place in those techniques.

**TABLE 4**  
ANOVA on Analytical Orientation

	MEAN		F
	BBA	MBA	
	(N)	(N)	
<b>Factor 1</b>			
<b>INTERNAL ANALYSIS:</b>	3.83	3.43	4.71*
	(82)	(26)	
+ Cash flow analysis			
+ Inventory analysis (EOQ, ect.)			
+ Break even analysis			
+ Financial ratio analysis			
+ Regression analysis			
<b>Factor 2</b>			
<b>EXTERNAL ANALYSIS:</b>	3.45	3.13	2.09 n.s.
	(86)	(32)	
+ Purchased information on Price of Competitors			
+ Purchased industry sales potentials			
+ Purchased sales in units of competitors			
<b>Factor 3</b>			
<b>MICROCOMPUTER/GOAL REVISIONS:</b>	3.71	3.36	2.47 n.s.
	(81)	(32)	
+ Used a Microcomputer to analyze the data			
+ Goal revisions			

\* P < .05

The degree of perceived challenge posed by managing the administrative and financial aspects of company operations also varied between the two subsamples (Table 5). Consistent with earlier findings, MBAS felt more at ease with administrative/financial decisions than did their BBA counterparts. In addition, while no difference existed between the two groups with respect to perceived difficulty of sales forecasting, both groups found this activity to be the most challenging of all.

**Table 5**  
ANOVA Activities Perceived Challenging

	MEAN		F
	BBA	MBA	
	(N)	(N)	
<b>Factor 1</b>			
<b>ADMINISTRATIVE AND FINANCIAL:</b>	3.10	3.90	21.77***
	(87)	(28)	
+ Managing and coordinating the group			
+ Choosing from among different sources of funds			
+ Raising funds to finance expansion			
+ Predicting and hiring the right number of workers			
<b>Factor 2</b>			
<b>EVALUATING AVAILABLE ALTERNATIVES:</b>	3.22	3.39	0.63 n.s.
	(87)	(33)	
+ Choosing from technological improvement options			
+ Choosing from labor union demand packages			
<b>Factor 3</b>			
<b>FORECASTING:</b>	2.48	2.59	0.25 n.s.
	(87)	(34)	
+ Accurate prediction of sales			

\*\*\* P < .001

## SUMMARY

A computerized management simulation game was used to compare the performance of a sample of BBA and MBA candidates. While no significant difference was found between the performance of two groups, evidence was found to suggest that graduating MBA and BBA students do differ with respect to the analytical orientation, cost consciousness, perception of role and value of planning, and locus of control. Finally, suggestions were made for further research to control for suspected confounding variables such as work experience and group size.

## REFERENCES

- Ascher, K. 1986. Mastering the business graduate. *Personnel Management*, January, 28-30.
- Associated Press-New York. 1986. Business schools bullish but critics growl. *The Pantagraph*, May, 4, E1.
- Bivens, T. 1984. Educators see problems in oversupply of MBAS. *Journal Star (Peoria)*, October 10, E2.

## Developments in Business Simulation & Experiential Exercises, Volume 14, 1987

Byrne, J.. 1986. The battle of the B-schools Is getting bloodier. Business Week, March 24, 61-70.

DePasquale, J. and Lange, R. 1971. Job-hopping and the MBA. Harvard Business Review, January/February, 4-12.

Gannon, M. and Arlow, P. 1985. The mystique of the MBA degree. Business Horizons, January-February, 20-25.

Hunt, S. and Speck, P. 1986. Specialization and the MBA: Is the broad MBA passe? California Management Review, 28: 159-175.

Jenkins, R. and Reizenstein, R. 1984. Insights into the MBA: Its contents, output, and relevance. Selections, Spring, 19-24.

Moody, G. 1983. What business expects of business schools. Business Forum, Fall, 13-15.

Nussbaum, B. and Beam, A. 1986. Remaking the Harvard B-school. Business Week, March 24, 54-58.

Swartz, S. 1985. Business schools revise programs to meet firm's changing needs. The Wall Street Journal, March 28, 33.

Tarr, C. 1986. How to humanize MBAS. Fortune, March 31, 153-154.

Waldrop, H. 1986. Are MBAS career boosters? Computer Decisions, April 8, 64-65.