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CORRELATES OF SATISFACTION, LEARNING AND SUCCESS IN BUSINESS GAMING

Achilles A. Armenakis, Auburn University
Hubert S. Feud, Auburn University
William H. Holley, Auburn University[1]

The Emory University Intercollegiate Business Game [1] is an annual opportunity for colleges and universities in North America to compete in business game competition. Twenty-six such schools in the United States and Canada competed in the 1974 Intercollegiate Business Game (I.B.G.). This paper presents preliminary research findings of a mail survey of the participants in the competition. The purpose of the research was to identify those factors that correlate with:

(1) participant satisfaction
(2) perceived learning, and
(3) team success.

METHOD

Survey Instruments

Three questionnaires were mailed to each faculty advisor. One questionnaire was intended for the faculty advisor, while the other two were intended for each participant.

One of the participant questionnaires was designed to obtain data in the following three categories:

(1) Personal data, e.g., age, membership in various professional, honorary, and social organizations.

(2) Academic data, e.g., grade point average, previous experience with business games.

(3) Team data, e.g., time spent in making decisions, satisfaction and perceived learning in participating in the I.B.G.

This paper represents a segment of the findings obtained from this team member questionnaire.

[1] The authors acknowledge the assistance of Mr. Thomas A. Wadham in tabulating and coding the data and in performing some of the statistical procedures used in the study.

Respondents

Of the 26 schools that participated in the I.B.G., only three teams failed to return any of the questionnaires. Table I displays the percentage response from the participating teams. In total, 100 (83.3%) of the known 120[2] participants responded to the questionnaire.

TABLE I
Percentage Return of Team Members
for the Twenty-Six Participating Schools

Number of Schools	Percentage Return of Team Members
12	100%
9	75-99%
4	50-74%
1	Less than 50%
3	No response
26	

Criteria of Team Success

Each team was judged on three different criteria. Points were appropriated for each criterion and summed to obtain a total success score. These criteria were as follows:

(1) Operations, which constituted 60 percent of the total score, was comprised of a team's business performance over three years (12 quarters) of simulated time.

(2) Presentation, accounting for 30 percent of the total score, was based on a formal presentation before a panel of four judges.

(3) An annual report was prepared by each team which covered the three years of simulated time. This constituted 10 percent of the total score.

For the purposes of this study, successful and unsuccessful teams were determined from the operations criterion only. The reasons were:

[2] The size of each team was obtained from the participants by their response to one of the questions. Since members of three teams failed to respond, it was impossible to determine their team size.

(1) Each team was judged by the same panel on operations while four separate judging panels observed the presentations and appropriated points. The 26 teams were assigned to four separate industries. One judging panel observed all the presentations for an industry. Therefore, to eliminate any possible inter-rater unreliability it was decided to exclude presentation in determining successful and unsuccessful teams.

(2) Presented in Table 2 are the rank order correlations between each of the criteria. It seemed as though there was little consistency in a team's operations relative to its presentation and annual report. Therefore, only the operations criterion was used.

In order to classify teams as being either successful or unsuccessful all team scores on the operations criterion were arrayed. Those falling within the top one-half were classed as successful and those falling in the bottom one-half were classed as unsuccessful. With a total of 23 teams, eleven were grouped into each class. The remaining team was not classed.

TABLE II
Spearman Rank Order Correlations Between
the Criteria Used to Judge
Game Performance in the I.B.G.

Criterion	Presentation	Annual Report	Total
Operations	.60	.35	.90
Presentation		.62	.82
Annual Report			.60

THE RESEARCH QUESTIONS

The research questions addressed in this study were concerned with two areas. The first area was related to differences between successful and unsuccessful teams. These research questions were as follows:

(1) Do successful teams employ more quantitative methods than unsuccessful ones?

(2) Does experience in participating in the I.B.G. distinguish between successful and unsuccessful teams?

(3) Does experience in participating in any business game differentiate successful and unsuccessful teams?

(4) Do successful teams devote more time to making decisions than unsuccessful teams?

(5) Does the composition of the teams differentiate successful and unsuccessful teams?

The second area was concerned with game administration. These research questions were as follows?

(6) Does rotating team members in various positions correlate significantly with satisfaction and perceived learning?

(7) Does team size correlate significantly with satisfaction and perceived learning?

CORRELATES BETWEEN SUCCESSFUL AND UNSUCCESSFUL TEAMS

The Use of Quantitative Methods

Each team was asked to indicate which quantitative methods had been used in decision making. Those teams using two or fewer quantitative methods formed one category called "little or no use," while those using three or more constituted the category "extensive use."

Using chi-square analysis it was found that successful teams did not employ more quantitative methods than unsuccessful teams. One would not suspect that there was any socially desirable response present because there were eleven teams in each of the two categories. It would appear if a team was trying to be socially desirable there would have been a larger proportion in the "extensive use" category.

I.B.G. Experience

Any team having one or more persons who had participated previously in an I.B.G. constituted a group referred to as "experienced" and those teams who had no one with experience was referred to as "no experience." Chi-square analysis revealed that this experience does not distinguish successful from unsuccessful teams.

A possible explanation could be that changes have been made in the game, e.g., making the game more complex by adding an additional sales territory, so that previous I.B.G.'s do not resemble this year's simulation. Moreover, each year the I.B.G. is different in the types of products that are produced and sold. Therefore, these changes may have served to eliminate or at least minimize the "practice effect" in participating in the I.B.G.

Business Game Experience

The same procedure was followed as above in formulating the categories of "experienced" and "no experience." Based on the findings above one would expect that previous experience in any business game would not distinguish successful from unsuccessful teams. Using a chi-square analysis this expectation was confirmed. Since the questionnaire did

not ask the respondent to indicate what other business games in which he had participated little can be said about the difference between the I.B.G. and those other simulations. It would appear that one could not expect to perform better in the I.B.G. as a result of participating in other simulations.

Time Devoted to Making Decisions

Each respondent was asked to give the number hours per week spent on the I.B.G. Because the team size varied average time per team member was obtained by dividing total hours spent by the team by the number of respondents from each team. A chi-square analysis revealed that successful teams did not spend any more time in making decisions than unsuccessful teams. In other words, "inputs were no measure of effectiveness." This appeared to be a realistic finding.

Team Composition

Realizing that one of the major criteria that a faculty advisor might use in selecting a team might be grade point average (CPA) it was hypothesized that there would be little variation in CPA (this was confirmed). Therefore, it was anticipated that other factors, which would indicate a person's initiative and/or leadership ability, may distinguish successful and unsuccessful teams. Some of these factors were:

(1) being a member of an honor society;
(2) being a member of a social organization;
(3) being a member of a professional society;
(4) working part or full-time.

Two categories for each of the above factors were formed. For example, if a team had 50 percent or more of its members belonging to an honor society it was considered to have an "extensive honorary membership." If a team had less than 50 percent it was considered to have "little or no honorary membership." Similar distinctions were made for each of the three remaining "initiative factors."

A chi-square analysis revealed that no difference was found in group composition between successful and unsuccessful teams for each of these "initiative factors." These results are not surprising. Much selection research has been conducted to determine which personal history factors correlate with individual success. In a review of selection research Korman concluded that personal history factors were much better for predicting success at the first level of supervision than for top level managers. [2, p.319]

CORRELATES OF SATISFACTION AND PERCEIVED LEARNING

Satisfaction with game play and perceived learning were determined by a participant's response to two questions. The scale for each question

consisted of five cells, the two extremes being "very much" to "very little."

Rotation

Each participant was asked if he had been rotated through various positions during the three years of simulated time. It was found that rotation correlated significantly with satisfaction ($p < .05$) and perceived learning (p L .05). In other words, those participants who served in more than one position were more satisfied with their participation in the game and felt as though they had learned more. This appears to be a significant finding that enhances the educational benefits derived from simulations.

Team Size

Team size varied from three person teams to 11 person teams. It was found that the size of the team was not significantly correlated with satisfaction or perceived learning. Or, stated differently participants in large teams were not any more or less satisfied than those in small teams. Furthermore, participants in large teams did not perceive any more or less learning than those in small teams.

DISCUSSION

The criterion of success employed in this study was industry rank in the operations phase of the I.B.G. Although this criterion is an aggregate subject to certain limitations, it is representative of group effort. Furthermore, since the major task of the manager is to make decisions in a group context this criterion seemed appropriate.

The authors consider the fact that there were no significant differences between successful and unsuccessful teams to be a significant finding. However, the statistical tests used in this analysis were chi-square tests and Pearson-product-moment correlations, relatively simple statistical procedures. It is quite likely that the relationships among the variables are so complex that more sophisticated statistical tests are needed in performing the analyses.

The basis for grouping the successful and unsuccessful teams may warrant changing in order to deal more exclusively with those teams in the extremes. For example, instead of classifying the top and bottom half as being successful and unsuccessful, respectively, perhaps a more appropriate classification would be in the top and bottom one- third.

REFENCES

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2. Korman, Abraham K. "The Prediction of Managerial Performance: A Review," Personnel Psychology, Vol. 21, (1968), pp. 295-322.