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## CRITICAL VARIABLES IN RESEARCH ON THE EDUCATIONAL VALUE OF MANAGEMENT GAMES

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### ABSTRACT

This paper suggests four categories of variables which should be taken into account when conducting research on the educational value of management games. These categories are: 1) participant characteristics, 2) game characteristics, 3) game administration, and 4) learning variables.

### PURPOSE

This paper will briefly identify the critical variables which must be dealt with in research on the educational value of management games. This set of variables will indicate that the varied milieu of participant characteristics, game characteristics, game administration, and learning objectives will require an extensive and coordinated research effort.

Reviews of research on management games cite both the paucity of valid research on the educational value of management games as well as the shotgun nature of the research. It is believed that a matrix of critical variables which individual research studies can recognize will aid in producing better research. It is hoped this paper will contribute to such a framework.

Even a widely accepted matrix of critical variables Cannot overcome the absence of valid and readily administered instruments with which to measure the objectives which management games proposit to fulfill.

### CATEGORIES OF CRITICAL VARIABLES

This paper will review four categories of critical variables: 1) participant variables, 2) game variables 3) administration variables, and 4) learning variables. This list of critical variables is a speculative list prepared by an author with 18 years experience with management games. Given space limitations only brief statements can be made about each variable.

#### Participant Variables

It is perhaps easiest to identify participant variables from past non-game and game research which indicate differences due to participant characteristics. Each will be identified and briefly illustrated. Demographic characteristics - e.g. age, sex, job or school performance. Ability - e.g. intelligence, problem solving ability. Knowledge, experience, education - e.g. degree major, professional certifications. Values and attitudes - e.g. tolerance for ambiguity, risk propensity, respect for authority. Personality traits and styles - e.g. need for achievement, aggressiveness.

#### Game Variables

The essential concern of game variables is whether different games played by participants with a common set of characteristics administered in the same way will produce different learning. Logic suggests this will be true in some circumstances and not in others. Three types of game variables will be briefly identified and

discussed. Degree of reality - this refers to the extent to which the environment represented is a specific real world environment. Degree of complexity - this refers to the complexity of both the internal and external environment as perceived by the players. Potential for modification - this refers to the extent to which the game administrator can readily modify the game environment.

#### Administration Variables

Administration may have the most dramatic impact on learning. Game administration focuses on conditions and requirements of play. These conditions and requirements are largely under the control of the instructor. Each will be briefly identified and discussed. Intensity and duration - this refers to the length of the game (e.g. 12 quarterly decisions) as well as intensity of play. Games may be played on a continuum of intensity from 12 hours a day for three days to decisions made along with case analysis. Administrator intervention - refers to the level of assistance and guidance provided students during play. This may vary from a requirement to submit numbers representing the decision to numerous classes on skills and knowledge required plus information on how market variables operate as well as frequent submission of a variety of planning documents. Organizational milieu - refers to the size and organization structure of the game team. Physical environment - refers to the physical support available. This may vary from none to team meeting rooms with storage facilities and computer consoles. Instructor attitudes - refers to the students perceptions about the instructors knowledge of the game and belief in the value of game play.

#### Learning Variables

Obviously a wide variety of learning outcomes may be sought in game play. However, there seem to be three types of learning outcomes sought. Each will be briefly identified and discussed. Attitudes - refers to one or more attitudes it is hoped will be attained by game play. These may include the administrative point of view or tolerance for ambiguity. Knowledge - refers to one or more areas of knowledge learned or enhanced by game play. This may be technical knowledge such as sales forecasting or general knowledge such as knowledge of the interrelationship of functional areas of the firm or improved knowledge of strategy. Skills - refers to one or more skills learned or enhanced by game play. This may include the ability to integrate or solve problems or evaluate the cost and value of information or influence others.

#### Conclusion

As a guide to research a four dimensional matrix is useful only if we keep two of the first three categories of variables constant and measure the impact of the remaining category on a given set of Outcome variables. Further research will help in identifying the most sensitive variables to be investigated later.