

Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

STRATEGY DESIGN, PROCESS AND IMPLEMENTATION IN A STABLE/COMPLEX ENVIRONMENT: AN EXPLORATORY STUDY

Jerry Gosenpud, University of Wisconsin-Whitewater
Joseph Wolfe, University of Tulsa

ABSTRACT

The purpose of this exploratory research was to study the decision making environment of the simulation, more specifically, strategies and organizational processes of simulation teams and the appropriateness of these strategies and processes to the simulation's environment. A case study approach was used with four MBA teams, and structured interviews were used to gather data. It was found that teams became more structured and programmed with time and success and that the strategic decision making behavior of simulation teams paralleled that of strategic decision makers in the real world.

INTRODUCTION

Top management or total enterprise games are commonly used in a business school's business policy or strategic management course (15; 28; 30). In a historical sense these games have been used to implement the original intentions of the business policy course -- to demonstrate and provide practice in the dynamic integration of the diverse functional skills and orientations provided in prior course work (13). As the course has evolved into a free-standing discipline with its own research traditions and expanding literature base, business games and large scale simulations also serve to provide students with vicarious insight into the world of the strategic decision making process (3; 6; 11; 19; 23; 31).

If a business game is employed to draw insights, lessons and conclusions regarding the nature of the strategic decision making process and the world of that decision maker, it is important for the environment created by the game (as well as the response by the students to that environment) to basically emulate the real-world environment of the strategic decision maker. A question exists, however, regarding the degree to which students playing a business game operate like real-world decision makers. It could be argued the decision making environment created by a total enterprise business game is patently false -- the game is a short-term experience, real careers are not at stake, there are no real factories, offices, workers, or products involved, feedback is basically I quantitative and instantaneous, and The exercise is conducted in a fundamentally benevolent yet manipulated classroom situation. Alternatively it could be argued that time compression heightens the decision making experience while still allowing long-term results to be realized, players still internalize the situation despite the lack of tangible details to make the game physically realistic as they feel the pain of failure and the exultation of success, feedback is provided in a form similar to that employed by large scale corporations, and the environment enacted by the players themselves is the dominant one in a experiential situation.

This paper reports the first of a series of exploratory studies on the within-team world created by Teams of players in a business game. Knowledge of the validity of this world should be or value to these conducting research on organizational and group processes as well as research on

the making of strategic/tactical decisions. From a pedagogical perspective, however, knowledge of the within-team world created by student teams would facilitate the experiential learning process by aiding in the preparation of more-cogent game briefing and de-briefing exercises as well as forewarning the instructor regarding the nature of possible interventions to be employed during the conduct of the game itself

CONCEPTUAL FOUNDATIONS AND PROPOSITIONS

Most business games create oligopolistic macroeconomic environments. Under this market structure the firm's success or failure is determined by the appropriateness of its internally-generated strategies and tactics given the nature of the macroeconomic environment and the strategies and tactics of its competitors. An oligopolistic structure, however, merely circumscribes the degree and general nature of interactions possible between the contestants -- other factors such as the environment's turbulence (10), munificence (1), and complexity (9) are also partial determinants of the firm's success and are major factors shaping the salient issues in the firm's task environment (7). In this sense the firm's macroeconomic environment sets the stage for strategic decision making and this environment should be considered the prime determinant of the decision making team's strategy, decision making structure, and leadership style. Accordingly, the appropriateness of a team variable is contingent upon The nature of the firm's macroeconomic environment and the accuracy of the management team's perception of that environment. In the Duncan (9) schema an organization's environment possesses two dimensions -- its degree of complexity and its degree of change. Given the particular degree of complexity and change found in the organization's environment different organizational forms and formal inter-relationships are necessary.

Once inside the firm Thompson (29) states the organization's decision makers now face two decision issues--what goals (ends) the firm should pursue and what causal linkages (means) exist with which to pursue those goals. Again, a contingency view is taken where the appropriate decision making method, leadership style, and evaluation criteria is dependent upon the degree of agreement existing regarding the firm's goals and the means for accomplishing its goals. Miesing and Wolfe (21) have recently combined the Duncan and Thompson schemes into a matrix structure combining the firm's environmental change dimension with its causal linkage dimension. Table 1 displays the results of this integration (21, p. 774). As an example, the situation depicted in the northeast quadrant finds the firm's causal linkages to be relatively unknown but its environment is relatively stable or unchanging. Accordingly a consensual, intuitive planning and decision making style is most appropriate while The organization's leader should be an arbitrator and an overall collegial style should be encouraged and supported by the organization.

Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

TABLE 1
PLANNING SYSTEMS BASED ON CAUSAL
LINKAGES AND ENVIRONMENTAL CHANGE

	Known ← Causal Linkages → Unknown (Synoptic Orientation) (Behavioral Orientation)	
Stable ↑ Environmental Change ↓ Dynamic (Incremental Orientation)	Planning Style: Computational Decision Making: Analytical Leadership: Authoritarian Organizations: Mechanistic Strategy: Proactive Success: Unity of purpose; minimal interaction; efficient Example: Mature, dominant firms	Planning Style: Consensual Decision Making: Intuitive Leadership: Arbitrator Organizations: Collegial Strategy: Judgemental Success: Best estimates; democratic; cohesive and cooperative Example: Innovator facing moderate challenge
	Planning Style: Contingency Decision Making: Incremental Leadership: Statesman Organizations: Matrix Strategy: Interactive Success: Environmental scanning; close internal communications; tight control Example: Environmental adopters	Planning Style: Conceptualized Decision Making: Inspiration Leadership: Charismatic Organizations: Organic Strategy: Creative Success: Exploit opportunities; thrive on ambiguity and complexity; innovative "gestalt" thinking Example: Entrepreneurial firm

The models that have been described suggest three propositions regarding the appropriateness of a student team's strategic decision making process as well as the elements within that process given the organization's external environment.

Over the course of a simulation's run the team's knowledge of its causal linkages should move from the unknown to the known if the firm is to be successful, i.e. the firm should move from a behavioral Orientation to a Synoptic Orientation.

2. Over the course of a simulation's run the team's degree of agreement regarding its goals should move from the unknown to the known if the firm is to be successful.

3. The successful firm must correctly interpret the amount of environmental change it faces. In a dynamic environment the firm should adopt an Incremental Orientation while in a stable environment the firm should adopt a Programmatic Orientation.

At this Stage of our exploration into game-related decision making environments we will tentatively conclude that an environment created by a simulation is valid and potentially useful for business policy pedagogical uses if (1) the proposed strategic decision making behavior is evidenced, and (2) the proposed suitable behavior is rewarded with successful organizational performance.

METHODOLOGY

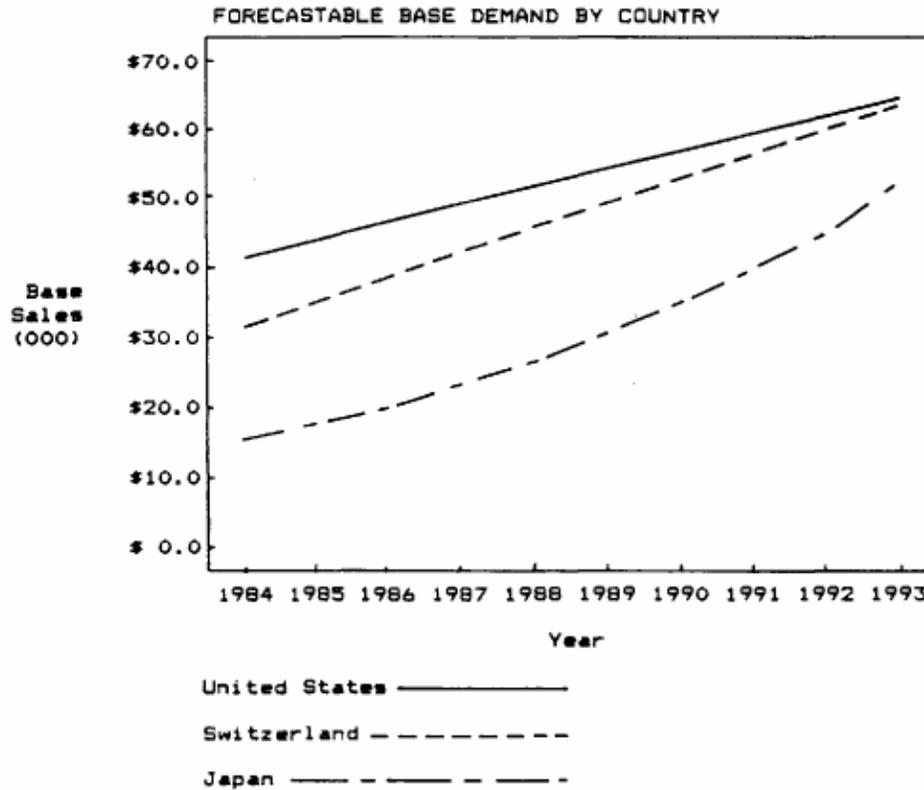
Fourteen masters students were placed on four self-selected teams. Seven of the fourteen were fulltime students, eight were commuters and four were international students. The teams played for seven decision rounds plus two practice rounds in Hinton and Smith's (16) *Strat-Plan* for 35.0% grade credit with team success determined by the weighted average of the following criteria:

Mean ranked rate-of-return on investment	50.0%
Cumulative profits	30.0%
End-game stock price	10.0%
Mean ranked Market Share	10.0%

Strat-Plan was chosen for this study due to the flexibility it offers the game administrator in selecting various levels of game complexity and environmental rates of change. Scenario was chosen for this study. This scenario created a multinational environment (United States, Switzerland, and Japan) that was complex but stable. Although two products could be sold in each country through branch offices via salesreps, the scale of operations, monetary exchange rates, and manpower and production costs were identical given constant relative values for dollars, Swiss francs, and yen. The only difference between each country was its forecasted rate of growth and this itself was constant and perfectly predictable. Given a moderate amount of analysis each *Strat-Plan* team could have credited the graph in Figure from data supplied by the Game Administrator. This graph shows that Switzerland's base demand would equal that of the United States by 1988 and that Japan demonstrates the greatest constant growth of the three countries available for commercialization.

in-depth group interviews were conducted at the end of the semester by company. Each team was questioned as to its grand strategy, self-assessed success with the strategy, new and why the strategy changed if such was the case, team's structure and how and why the structure changed if such was the case, role specialization, team formality, and expressed leadership style; peer evaluations in the form of stock bonuses were also collected as an additional measure of the team's cohesion. Transcripts were made of each team's interview and individual content analyses were conducted on them. A high degree of inter-rater agreement was obtained.

FIGURE 1



RESULTS

The summaries of each team's strategic operations are presented below with commentary provided by both authors.

Firm 1. This company chose to stay small and also to emphasize Switzerland and the United States in the order because it felt production costs in those countries were the lowest, even though data presented at the beginning of the simulation showed costs were identical in all countries given local currency values. This firm also wanted to avoid Japan because it had believed erroneous information that a recession was going to occur there, even though the game's parameter report showed a constant 12.0% growth rate in Japan. Firm 1 said they were a successful team and they attributed their success to low plant investment and no excess inventories. Success was also re-defined by them to mean "making money" and not going bankrupt. They were successful in terms of return on investment but it was the simulation's least successful team in terms of profits, and in composite terms, it came in second (but it was losing ground to firms 2 and 3). The members recognized early that a low cost, high volume strategy was the most appropriate strategy, but it chose to remain small in the hopes that its strategy eventually would prove successful. Near the end of the game the firm doubled its capacity and tried to emulate Firm 4's strategy of low prices and high volume. This team's structure was normal functional, in that the strengths of finance, marketing and production experts were relied upon, but everyone had input in all decisions. As the simulation progressed the firm's decision making sessions became more formal or ritualized with one person entering data into the spreadsheet programs, another doing all the mathematics, and two others joining on their company's financial aspects. Overall, a collegial climate was obtained with no leader existing within the team. Decision sessions considered

marketing first followed next by production and then finance across the countries of the United States, Switzerland, and Japan (the order presented on the computer's printout and not the order of strategic emphasis outlined by the team).

Firm-2 began with an admittedly conservative or minimalist strategy expressed as "avoid interest charges, avoid emergency loans, avoid excess capacity, and use the capacity we have" as they were initially uncomfortable with the game's operations and did not know how to proceed. They also felt markets were declining or constant even though the forecasts for all countries were positive. The firm soon changed its strategic posture to one of growth after seeing demand increasing faster than the industry's production capabilities. Firm 2 felt their strategy was successful only at the end of the game after making many corrections along the way they increased their technological investment, built more plant, lowered prices, and increased advertising to generate more sales. At the game's end this firm's profits were increasing at a faster rate than the other three. Regarding structure, this three person firm was dominated by two individuals but in a collegial atmosphere. The team initially tried a decentralized structure around markets but this was discarded after two decision rounds because 1) the team discovered all markets were consistent and that little difference existed between them, 2) members desired a greater degree of interaction between themselves, and 3) certain individuals assigned to market areas did not prepare themselves well for their meetings. No specific roles were assigned except for one person performing the data entry function.

Firm 3's strategy basically evolved over the course of the individuals under the pressure of very low earnings and an inferior rate-of-return on investment (ROI) and

Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

the realization that Japan was a growth market. its ultimate strategy was one of growth featuring medium to low prices, increased plant investment, high research and development expenditures, and high sales promotion efforts. As was the case with Firm 1, this company re-defined success as having a high ROI, and high sales and research and development. The team met in a collegial committee structure, remained the same over -the course of the game, and no specific role assignments were made. Not all members were present during the team's decision making sessions and only one person attended at the team's meetings. The company made its decisions at the computer terminal without much advance preparation and its affairs were conducted in an informal yet consistent fashion.

Firm-4 obtained immediate agreement regarding its strategy and goals. Its objective was to capitalize on the growth they saw in the parameters reports they received at the beginning of the simulation. This strategy was implemented via a clear-sighted causal chain comprised of high technical investments early in the simulation to obtain lower manufacturing costs and owing for profitable price reductions which in turn would increase sales and capture an increasing share of a growing world market. This strategy did not change as it was immediately successful. The firm was fairly structured and specialized along functionalness although each player felt free to input each other's area of activities. Although no formal leader was employed, all decisions were centralized through one individual. As the game progressed the decision making sessions became more formal and telephone procedures were implemented so information could be exchanged between meetings. Overall, a centralized collegial form appeared to prevail based upon the trust which developed over time.

DISCUSSION

Based on the planning model outlined in this paper, firms operating under the scenario provided in the simulation would initially find themselves in the northeast quadrant situation where the firm's external environment is stable or programmatically predictable and its internal environment possesses unknown causal linkages. At this stage of the firm's development it should employ a consensual planning style and intuitive decision making. The firm can be innovative in the market place as the external environment is known factor but it faces the challenge of making order of the internal chaos that initially presents itself. The ultimately successful firm should ultimately know all its causal linkages and therefore can move into the northwest situation. This fully-realized firm can adopt a computational planning style combination with an analytical decision making mode and the firm can be proactive with its external environment. Decision making sessions will become rather mechanistic and authority will become centralized.

In this study Firms 1 and 2 did not initially understand the nature of their external environment and therefore could not implement a correct strategy. Both firms eventually realized the correct strategy, firm 2 implementing it near the game's mid-point, firm 1 near the end. Firm 3 did not even attempt to create a proactive strategy but instead 'muddled through' (18; 27) until it finally found correct strategy near the game's mid-point. Only Firm 4 identified the nature of its industry correctly and by design chose the correct strategy for that industry. All firms except 4 were operating under the conditions of Thompson's Quadrant V they did not know what to do and they did not know how to do it. Given an independent reading of the interview schedules obtained for this study, the junior author estimated the end-game ranked

profit performance and direction of change in profits for each firm in the simulation. Under the conditions described here a Rho = xx Spearman correlation coefficient was found thus indicating the simulation rewarded the proper strategic moves and processes while punishing those that were incorrect. Firm 1 employed an incorrect strategy for the entire game while simultaneously using wrong decision structure for the situation; Firm 2 basically did nothing until after the fourth year of play at which time they implemented a growth strategy in an inconsistent fashion; Firm 3 blindly submitted a series of disjointed decisions until a correct strategy was "revealed" to them.

For a firm to be successful in the real world it has been stated by Drucker (8) and others that it must pursue the correct strategy in the correct fashion. Such was the case with Firm 4 and this firm obtained the highest profits in the simulation. The results found here coincide with the results of other studies regarding positive reinforcement. It has been found that correct decision making behavior is rewarded in a business game (32; 33), internal logic exists within a simulated environment and this environment reinforces good business management theory (14) and players ultimately sense the requirements for successful play (2; 25; 26).

To at least some degree, the teams behaved as predicted by the Miessing-Wolfe model as displayed in table 1. To all teams, the game presented novel confusing stimuli at its introduction. Causal linkages were unknown, and thus a behavioral orientation was used.

The model predicts a synoptic orientation and a computational planning style in a stable environment as causal linkages become understood, and the teams did become more "computational", mechanistic and formal as they gained understanding. Teams 1 and 4, the two most successful in terms of the simulation's composite grading system, adopted roles and utilized a functional structure fairly early in the simulation, and the more successful team 4 became more formal and centralized with time. Team 2's structure became settled later, as they began to catch the leaders; although their resulting structure, a two man partnership, was far from a formal one. Team 3, the least successful firm, never settled. These patterns suggest that as causal linkages become known, structure becomes more crystallized and efficient. This is relatively consistent with that predicted in Table 1 and parallel to Thompson's notions (29) of what occurs in the real world.

A review of the team interviews also revealed conformity with what is known about real-world strategic decision making behavior. Although a number of very clean and logical prescriptive models of the process have been outlined (12; 24) the actual process is disjointed, messy, circuitous, and not clearly understood by those engaged in the process (4; 5; 17; 20; 22; 34). Most simulation teams expressed themselves in terms of actions taken (lower our prices; put more sales branches in Switzerland) rather than as grand strategies, objectives or results to be pursued and all teams except Firm 4 verbalized incomplete and gapped causal chains as well as "strategies" that were inchoate or poorly integrated. Two firms exhibited goal displacement by substituting the results they were able to obtain (now called "Success") for the criteria which had been chosen for them by the instructor and had been mutually agreed upon in advance. Firms also rationalized their results rather than attempting to accept personal responsibility for their actions. Firm 1 said they avoided Japan because of its higher production costs.

Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

although an analysis of costs by country would have revealed they were uniform throughout the simulation while Firm 2 adopted a "do nothing" posture without explaining why they felt they could not do anything, or why Firm 4 was able to adopt a proactive stance under the same environmental conditions.

CONCLUSION

This exploratory study has found the decision making environment created by the scenario used (a stable/ complex environment) provided a reasonable approximation of the environment experienced by real world strategic decision makers. Although the process of organizational learning was a factor uniquely associated with the classroom situation, the players exhibited many behaviors exhibited by their real world counterparts. Accordingly, it is tentatively concluded that valid lessons regarding the strategic management process can be drawn from the complex game experience employed in this study. Further studies will be undertaken using environments which are stable/ simple, unstable/simple, and unstable/complex to determine the lessons that can be logically drawn from the exercise.

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Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

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