

MERGER OF COMPANIES IN BUSINESS GAME EXERCISE

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ABSTRACT

Business games are designed to simulate real business environments. Merger and acquisition of companies are usual processes in real world. However, designers of business games are somehow ignoring this hot topic. This paper aims to present a simulated merger process. To do so, a business games was modified to encompass the horizontal merger process of companies. Moreover, a pilot administration of the merger process was conducted in a business game exercise. Simulated results are presented focusing on the performance of the merged companies. All merged companies had a superior performance in comparison to their competitors. Finally, evaluations of participants in the pilot exercise are also presented. These evaluations are focused on learning results, simulated performance and teamwork. Overall, participants stressed learning about the merger process and teamwork was improved by providing organizational learning, out-of-box thinking, benchmarking information, and intercultural interaction.

INTRODUCTION

Merger and acquisition is a hot topic to both academic and corporate levels, especially after the emergence of the globalized business world. Usually, acquisition is related to companies with different economic power whereas merger involves companies with similar structure and size. The merger can be horizontal and vertical. Vertical merger involves a company and either a customer or a supplier. Horizontal merger involves competitors or other merger not characterized as a vertical one.

Although the merger of companies in real world is a common activity to gain synergy and to improve results, in simulated world such topic is practically unexplored. ABSEL literature contains one experiential exercise (Veiga, Yanouzas, & Sanders, 1984) and two computer-based simulations (Sord, 1982; Thavikulwat, Chang, & Sanford, 2008) about merger and acquisition. In the Sord's simulation all acquisition candidates are included in the model. The participants are expected to analyze different alternatives for acquisitions based on data provided by the simulator. The goal is maximize economic value of the combined company (parent company and acquired company). Yet, in the Thavikulwat *et al.*'s simulation an endogenous incentive was included in the algorithm to stimulate horizontal integration: the experience curve. An exercise was performed and results indicated that horizontal integration did

occurred, but authors could not indicate that this integration was related to the endogenous incentive devised or by other incentives present, such as tax and financial ones. This paper extends business games literature by demonstrating another merger process. Moreover, this simulated process is tested and evaluated by the participants of the exercise.

METHODOLOGY

The subjects for the study were 65 undergraduate students enrolled in two-hour class of a required management simulation capstone course at Universidade Federal de Santa Catarina – Brazil, during the semester of 2009/2. A single professor taught two classes (simulation A and simulation B). He used a manufacturing simulation – SIND (2009), a top management game with more than 30 decision inputs per round. Such simulation is considered a complex one according to Keys and Wolfe's (1990) definition. In each class the students formed 8 teams to manage 8 simulated companies. Each team started with 3 or 4 students.

At the beginning the professor has communicated all students that the simulation would have companies' merger and additional information would be provided later. At the middle of the simulation the professor wrote an article in the simulated newspaper describing the merger's process of the companies. Main information were: (a) only two companies' merger would be accepted by the regulatory agency; (b) the merger's process could involve only two companies; (c) the candidate companies should write a prospect justifying the merger reasons, (d) once accepted the merger, a CEO should be designated and this director should fire half of the students-directors. The fired students would be reallocated in the remaining companies of the simulation.

Once the news was published, the interested companies had one week to prepare the prospects. The professor, playing the role of the regulatory agency, has judged the applications based on the quality of the justifications. Indicators of this quality were synergies created, operational and financial gain and economies of scales. No merger was rejected because in one simulation only one demand of merger was asked and in another simulation two mergers were asked. At the end of the simulation an open-ended questionnaire was administrated for all students to gather their perceptions about the consequences of the merger's process.

SIMULATED MERGER PROCESS

In real world the process of merging companies is highly complex. It involves different aspects such as legal, economic, financial, accounting, operational and cultural (Barmeyera & Mayrhofer, 2008; Huyghebaert, N., Luybaert, M., 2010; Ruiz & Requejo, 2011). In simulated environment some aspects can be simplified or even eliminated. For example, legal aspects are not dealt in business games. Accounting procedures are equal for all simulated companies. Cultural aspects are results of the co-existence of different cultures. In business games the employees are usually dealt quantitatively only, such as number and productivity. Qualitative aspects are marginally considered, such as motivation. As a result, employees' cultural problems are not expected to occur in modeled simulated merger.

The simulated merger process in question will emphasize the operational, financial and economic aspects, as discussed below.

Operational: Production's employees, machinery, equipment, raw material, and finished product are summed to form a new company (Company X + Company Y). The higher salary will be considered by the new company. Productivity and motivation of the employees are calculated proportionally. Investments in research & development (R&D) are cumulated and only the highest quality product will continue to be produced. A single administrative structure remains. Thus, unnecessary employees are dismissed and facilities are sold.

Financial: Cash flow balance, receivables, payables and loans are summed. Some land and building are sold improving financial figures.

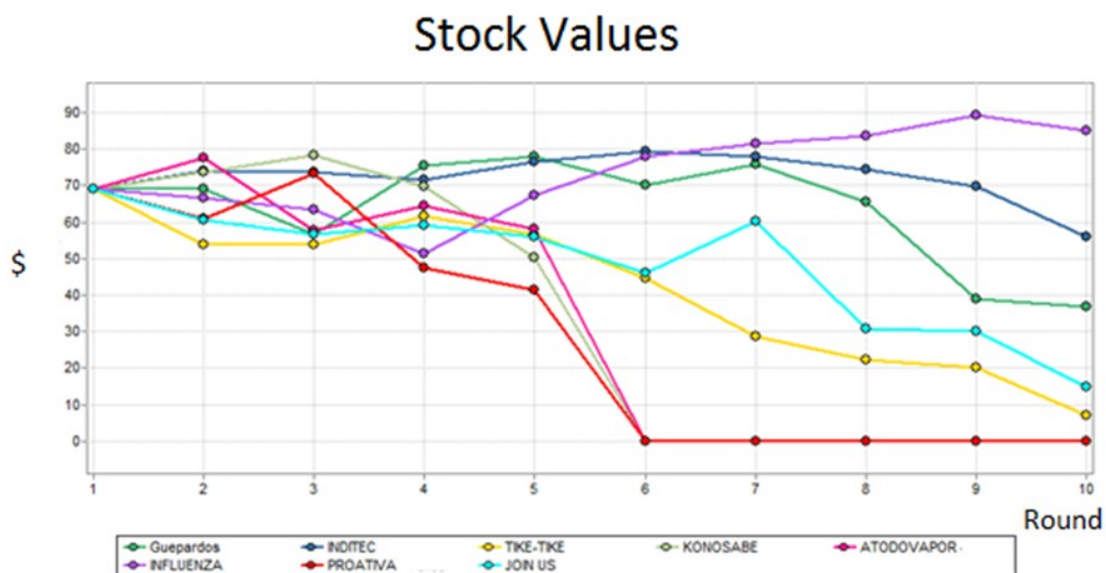
Economic: Some activities of the merger process can increase economic performance of the new company. The sales of the assets will capitalize the company, reducing its indebtedness. Earnings can also increase by the reduction of administrative fixed costs and by the reduction of the unitary cost provided by the economy scale.

RESULTS

Two kinds of results were analyzed at the end of the simulations: variation in the performance of the merged companies and the students' perceptions about the consequences of the mergers. Variation in performance was analyzed directly by the reports issued by the simulator. Students' perceptions were gathered by an open-ended questionnaire. This questionnaire asked positive and negative aspects of the merger considering company performance, student learning and teamwork. All students were asked to answer the questionnaire. Fifty six students answered the questionnaire giving an answer rate of 86% (56 out of 65).

Performance will be analyzed considering the simulation A and the simulation B separately. Simulation A had 10 simulated rounds. Two mergers occurred in the round 6, involving 4 companies. Before the mergers, Guepardos Company has been dominating the stock market, the indicator to evaluate the companies' performance. This company has decided not to merge. After the mergers, Guepardos Company lost position to Influenza and Inditec companies.

Figure 1
Simulation A - Stock market values of the simulated companies



Both companies are result of the merger's process. Figure 1 shows the stock values of all simulated companies along the 10 simulated rounds. It is possible to observe that in round 6 three companies had their stock with zero value. Two of them were consequences of the merged companies. The other was related to a scheduled activity; that is, closing one company in the middle of the simulation.

In simulation B only one merger occurred, in round 7, involving the companies *Steel Brazil* and *One Factory* (resulting in the *One Brazil Company*). Before the merger *Steel Brazil* and *One Factory* ranked the fourth and the fifth place in stock value, respectively. The leader was *UniFabrica Company*. The leadership remained one round more. *One Brazil* had an increased performance after the merger and it got the first place in stock value at the end of the simulation. Figure 2 shows the stock values of all simulated companies along the 12 simulated rounds. In round 6 one company was closed as part of the scheduled activity (equal to simulation A). In round 7 one merger occurred and in round 12 another company closed because of a conditional activity: the closure of companies which equity reduces to

less than 70% of its equity in round 1. In the three situations the stock value of the related companies achieved zero values.

Second kind of result was analyzed using data from an open-ended questionnaire administrated for all students at the end of the simulation. Gathered data were reduced using the Miles and Huberman's approach (1994). Table 1 through Table 5 show three main answers frequencies to each question.

Table 1 compiles the reasons why the participants decided not to merge the company. The majority of the answers had as motivation the participant's evaluation, that his/her company had a good structure and that the merger was unnecessary. Some of the participants also stressed his/her regret about the wrong evaluation made. Other cited motives were the lack of an appropriate company to merge to and the interruption of the merger's process by one of the involved companies.

Positive aspects declared by the participants often included terms such as 'teamwork' and 'improvement'. Actually, teamwork improvement can be used as an aggregated

Figure 2
Simulation B - Stock market values of the simulated companies

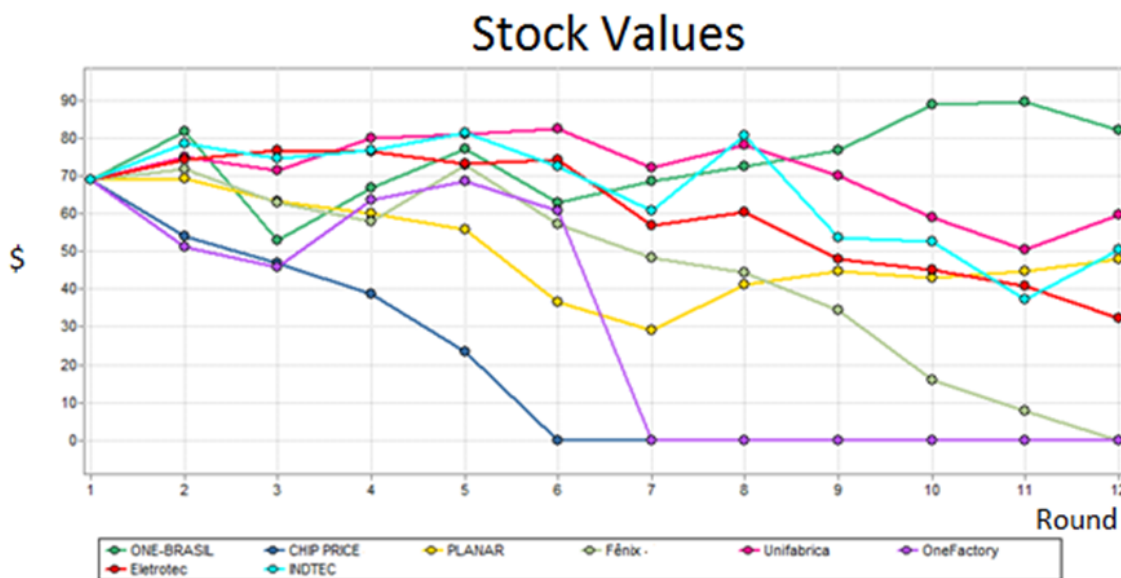


Table 1
Motives given by the participant for not merging his/her company

Frequency	Number of companies	Reason to not merger the company
10	6	Company has decided that continuing alone would be the best option
6	3	Company did not find partner for merging
4	3	The candidate company gave up

construct to define participant's declared and undeclared concepts such as organizational learning, out-of-box thinking, benchmarking, and intercultural interaction. All of these concepts can be associated with the merger's process. Another positive aspect stressed by the participants involved in the merger process was related to the performance of the new company. Operational and financial gains occurred by the economies of scales and synergies. As a result, the profitability was enhanced. A third positive aspect highlighted was the participant's learning about the merger process and its consequences. Learning, no matter if characterized as organizational or individual ones, is an important point because the main goal of the business games is to provide learning. If students perceive that learning occurred, then the business game methodology achieved its objectives. Table 2 shows the frequency of the major positive aspects stressed by participants involved in the merger process.

According to Table 3, the major frequency of negative aspects from the participants that merged their companies was, actually, that no negative aspects occurred from the

merged companies' viewpoint. Simulation A had two merger processes involving four companies. As a result, participants of two teams were distributed to the remaining companies (companies not involved in the merger process). A negative consequence of the two mergers was having some teams with 5 participants instead of 3 or 4 from the beginning of the simulation. This large number of participant was stressed as a negative aspect by 4 participants. An interesting point to highlight is that two participants of a merged company stressed the loss of competitiveness as a negative aspect. The negative view was not related to the performance of their companies, but to the market competitiveness and their motivation to continue to making decisions.

The merger of competitors generated new challenges to the participants not directly involved in the process. Nine participants have declared that the merger of their competitors was a motivation to work harder. Two different strategies were disclosed: compete with the new company by the leadership and work for remaining in the market. As to the participants involved in the merger process, the individual

Table 2
Positive aspects of the merger stressed by participants directly involved in the process

Frequency	Number of companies	Positive aspects resulted from the merger
13	6	Teamwork improvement
11	6	Operational, financial and economical improvements
2	2	Individual learning about the process

Table 3
Negative aspects of the merger stressed by participants directly involved in the process

Frequency	Number of companies	Negative aspects resulted from the merger
6	4	No negative aspect
4	4	Too many participants in the new team
2	1	Loss of competitiveness

Table 4
Positive aspects of the merger stressed by participants not directly involved in the process

learning about the process was also stressed by some participants not directly involved. Some participants also declared no positive aspect given by the competitors' merger. Table 4 presents the frequency of the major positive aspects stressed by participants that were not directly involved in the merger process.

Almost the totality of the participants not involved in the merger process declared as one negative aspect the powerful of the merged companies. According to them, it was practically impossible to compete with the merged companies. Three additional participants emphatically stressed their demotivation with the new situation. A third major negative aspect was the team size. As to the merged companies, some remaining companies also had 5 participants because of the reallocation of participants from the merged companies. Table 5 shows the frequency of the major negative aspects stressed by participants that were not directly involved in the merger process.

CONCLUSION

A horizontal simulated merger was designed and tested using two pilot exercises. In simulation A two mergers occurred while in simulation B a single merger occurred. In both simulations the winners were merged companies. In simulation A the second place was also achieved by a merged company. Such results indicate that the modeled environment in the simulation benefits the merger process of companies. These companies receive a lot of operational, financial and, as result, economic advantages. In real world the merged companies usually have problems when they are integrated by two main reasons: there is no sufficient synergies as initially alleged and there are so many conflicts because of the differences between cultures that mitigate or become unfeasible the integration of the companies. In simulated world the alleged synergy does occur because it is mathematically modeled and cultural problems do not occur at the employee's level. In the managerial level, that is, among students playing the role of directors of the simulated companies, cultural problems are not also expected to occur because the interests usually are similar. Students usually prioritize friendship and grades are marginally related to simulated company performance.

If there is a positive bias, so why is the merger process

important in simulated environment? As a learning laboratory, business games should show main aspects of the business real world and companies' merger is a major issue. Thus, the professor can use his/her expertise to discuss the consequences of the merger process with the students and to make a parallel between the real and simulated worlds. Consequently, the discussion generated could be an opportunity to improve learning as demonstrated by the answers given by the student that have participated of this pilot exercise.

Considering the participants' evaluations about the merger process, some point must be highlighted. First, the merged companies had operational and financial benefits that become such companies practically invincible. Second, the learning about the merger process occurred to all participants, no matter whether they were involved in the process. Finally, activities involving closing companies during the simulation, such as mergers, must be planned considering the inclusion of one or two additional participants in the teams.

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Table 5
Negative aspects of the merger stressed by participants not directly involved in the process

Frequency	Number of companies	Negative aspects from the merger of the competitors
25	9	Merged company too big to compete
3	3	Demotivation caused by the size of the new company
4	2	Too many participants

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