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The best practice in teaching process by using managerial simulation games

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Abstract

For business students at universities managerial simulation game is an effective tool supporting development of students' knowledge competencies. Simulation games provide a feedback between realized students' activities and results. In contrast with passive didactical techniques students reach an overview of an impact of realized changes in certain parameters that influence the whole market in the short period of time. Simulation games support system, interdisciplinary and strategic way of thinking. Aim of the paper is to point out contribution of selected simulation games in teaching process at the university.

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1. Introduction

Managerial simulation game used for simulation of economic processes is an effective didactical technique. Using managerial simulation game is useful for business students of the third grade of bachelor study program and of the first grade of master degree study program at the universities. By using these games students are able to understand enterprise running and also have the possibility to collate existing theoretical findings thanks to experiential education. Systems thinking, interdisciplinary diagnostic and strategic thinking is developed in the case of master program students.

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This paper points out the most significant benefits of simulation games using in teaching process at the university. There will be described the main steps of simulation games implementation used at the Faculty of Economics at VSB – Technical university of Ostrava (Czech Republic). The benefits come out of students' questionnaire. The most important results from the questionnaire are showed in graphs.

2. Benefits managerial simulation games in teaching process

Managerial simulation game (Mildeová, 2007), (Aldrich, 2009) simulates economic phenomena and conditions (settled parameters of decision), that must be considered by the student while managing virtual firm. Through managerial simulation game students experiment with an economic model which represents selected part of real economic system (it consists of selected relations, links between the elements). Simulation experiments (Tuleja, 2007), (Častorál, 2008) enable to confront and subsequently to combine results and to find a new variants of solutions. Simulation game does not substitute practical activities in the field of decision making. But it enables to acquire knowledge from the basic dependence among economic values and to reach skills of professional character (Powell, 2009).

Contemporary in the Czech Republic managerial simulation games are used in teaching process at the universities as well as in educational companies. Used managerial games can be divided into two groups:

- Managerial games that can be implemented (e.g. MARKETPLACE, JA TITAN, CELEMI etc.) without any adjustment (after installing in computer) implemented
- Managerial games that are the product of a particular institution (school, consulting or educational firm) after buying certain software (VENSIM)

Both groups of managerial games have own specifics by which they differ especially in decision parameters (levels of decision), in graphic possibilities (using graphs in decision making processes), in chosen product commodity, in price etc.

During managerial simulation game knowledge competency is ensured by team experience sharing, see Fig. 1.

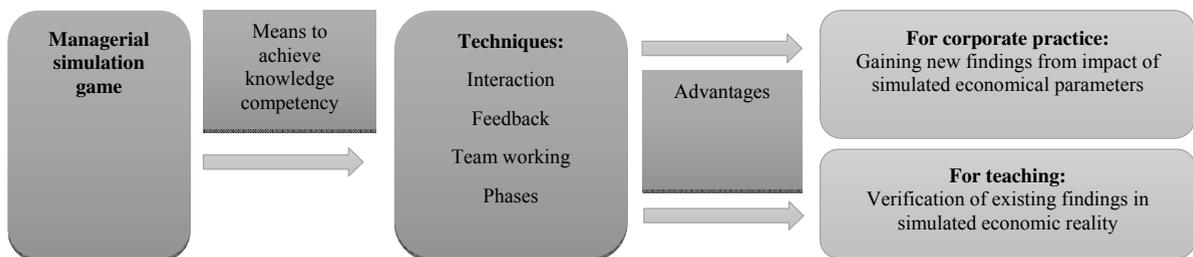


Fig. 1 Benefits of managerial simulation game

Source: Peterková, J., & Němčík, P. Managerial Simulation Game as a means of Development of Managers' Comp. Knowledge. Center for Investigations into Information Systems (online). 2010, vol. 7, no. 1. Available from <http://www.cvis.cz/eng/hlavni.php?stranka=novinky/clanek.php&id=63>. ISSN 1214-9489.

2.1. Teaching process with managerial simulation game

Teacher (moderator) plays an important role in teaching process. He provides theoretical background in the sense of introduction of contemporary market situation in particular simulation game. He points out which parameters play the most important role in relation to the final results. The main steps in particular LMS rounds including necessary calculation are worked out in the form of methodological instructions and located in LMS – Moodle.

At the same time teacher leads timing of a game and settles time of ending the round. One round is finished in the time of submitting economic parameters in simulation game. After finishing a round teacher (moderator) evaluates the teams according to determined criteria and comments results of each firm regarding PI index and revenues from

the beginning of the game.

Despite existing specifics in managerial simulation games there can be described general steps in teaching process including goals. The basis of the game is creating virtual firms including identification of roles in students' teams, while particular virtual firms form one sector (competing firms). During firm existence students team decides price, production, marketing, capital investment, research and development, charity or some other parameters in simulated economy situation (recession, growth etc.). After each round the teacher discusses the list with team ranking. Company Report and Branch Report are basis for decision making. Managerial teams aim is to manage virtual firm in the way they beat competitors and overcome in profit, sales and market share. The firm with the highest index is the best one. Fig. 2 shows steps realized in managerial simulation game.

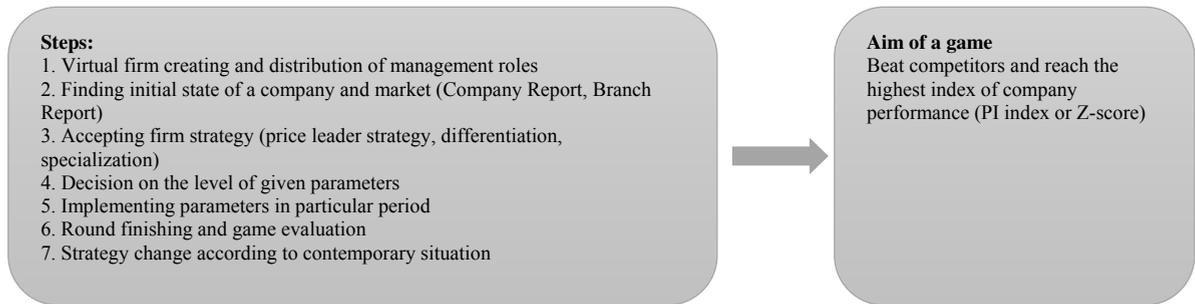


Fig. 2. Steps realized by students in managerial simulation game

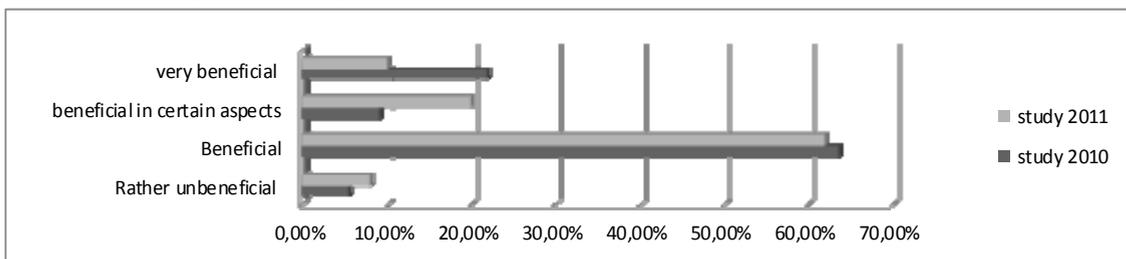
For managers as well as for the business students' computer simulations are an effective mean of teaching supporting holistic approach to problem solving.

2.2. Evaluation of the benefits of simulation games by using questionnaire survey

Evaluation of the benefits of computer simulations was realized by using questionnaire. This anonymous electronic questionnaire was used in 2010 (115 students) and 2011 (150 students). Participating students worked with simulation JA TITAN. The survey enabled to determine benefits of managerial simulation games for further study and future occupation.

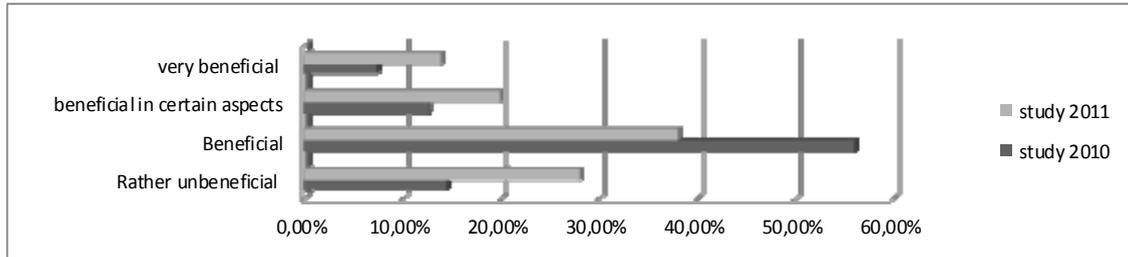
Most of interviewed students in 2010 (63 %) and in 2011 (62 %) considered the game to be favored and useful for further study by the fact that the game enabled understanding relations among simulated economic values (answers examples: simulation enabled to verify market functioning, team work, competing among students teams etc.) see Fig. 3.

Fig. 3. Benefits of managerial simulation games for further study



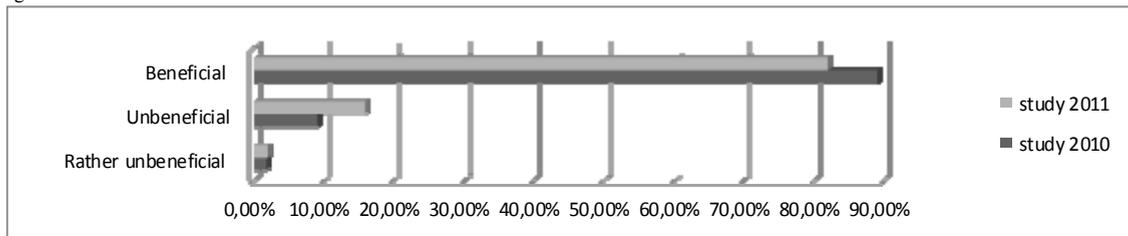
At the same time 56 % of students (2010) and 38 % of students (2011) regarded managerial simulation game beneficial for future occupation (examples of answers: opportunity to develop myself, not only to accept theoretical knowledge, perfect tool for managing real firm etc.), see Fig. 4.

Fig. 4. Benefits of managerial simulation games for further occupation



The biggest number of the students 89,1 % (2010) and 82 % (2011) considers managerial simulations as beneficial for understanding mutual relations among economic values (answer examples: simulations helped me to understand company investment, to get practical skills in managerial decision making, complex approach to problems, connection of management, microeconomics, calculations etc.), see Fig. 5.

Fig. 5. Team work usefulness



Simulation game taught some students to communicate in a team and to enforce their decision. Students mostly preferred 2 – 3 member teams.

Realized questionnaire showed that students mostly consider managerial simulation games as beneficial for further study and also occupation. These simulations enable to know economic rules of market by using game.

3. Steps realized by the students in managerial simulation game JA TITAN and MARKET HERO 2

Two simulation games are used in teaching process at the Faculty of economics (VSB – Technical university of Ostrava). In simulation game JA TITAN companies produce generators and in simulation game MARKET HERO 2 students run their companies in the field of informational technology. The main aim of the game JA TITAN is to introduce impact of price changes, marketing, research and development and capital investments on final results of the firms. On the other hand simulation game MARKET HERO 2 shows what it means to run a business in the sphere of information technology.

3.1. Playing managerial simulation game JA TITAN and its steps

This game is also based on team working. Each team must have at least two members. Before the game starts students create virtual firm choose management and roles. Firms produce generators and try to reach company balance, to beat competitors in the sense of amount of profit, sales and market shares.

Each game can be played by 8 virtual firms. These firms at the same time form generators market and offer the same product. During virtual firm running students team make many decisions (pricing, quantity of production, marketing expenditures, capital investments, research and development and charity, see Fig. 6.



Fig. 6. Simulation game JA TITAN

3.2. Playing managerial simulation game MARKET HERO 2 and its steps

Students form virtual firms, choose their names and get acquainted with the basic characteristics of IT branch. Firstly students recognize number of competitors and possibilities of decision making such as company fixed costs, available loans, distribution channels, form of advertising, way of forecasting etc.

Secondly students chose products or services that will represent their company portfolio. Managers must chose inputs (space, factory, machinery), employees, required skills, advertising of concrete products (e.g. banner advertising, advertisement in regional newspapers) for each type of product or service, see Fig. 7.



Fig. 7. Menu for decisions

After this part students settle concrete parameters of firm running including price calculation. This game is organized in several rounds and each round lasts three months. The whole game contain five years of company existence.

Once a round is finished, students can get the results in the form of balance sheet, sales report and income statement.

Reached results can be compared with the results from competitors realizing their activities in IT branch. Students can use Z-score. Companies with score higher than 2,9 have a good chance to survive at least next two years.

4. Conclusion

Simulation games represent ideal way of verifying and getting knowledge by using game. Teaching process is active and provides important feedback between students' activities and their results.

This paper contains the basic steps when playing simulation games JA TITAN and MARKET HERO 2, teaching process including role of teacher. The aim of the students' teams is to beat the competition and to reach the best economic results by using PI index and Z-score.

Realized questionnaire survey showed that students that have already used simulation games during their study at the university consider it to be beneficial both for their future study and also future occupation. Simulation games enable to understand relationship among economic values. Member of the students' teams also exercise their communicational skills. Survey also determined the main effects of using managerial simulation games:

- Visualization of strategic decisions realized by students
- Students' motivation support
- Complex overview of running business
- Usability of simulation game for practice

According to our findings we recommend using managerial simulation games in teaching process at the university especially for business students.

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