

# VIRTUAL BUSINESS SIMULATION AS A TOOL FOSTERING MODERN TEACHING METHODS IN HIGHER EDUCATION INSTITUTIONS

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**Abstract** Contemporary methods for education have always been the main point in offering the best practices on teaching and learning in higher education institutions. Recently during, and after the pandemic, digitalisation of teaching as a process has accelerated to a new level. Different companies are working and developing new digital and even virtual simulations that are offering not only to students, new and modern ways of enhancing their skills in managing different situations just like in real life. These new technologies are providing students and higher education institutions with opportunities to bring “close to real life” experiences with lower costs and fewer procedures. Learning-based virtual simulation games belong to a new developing approach in education. This paper demonstrates the use of a business simulation game in the process of flourishing skills and managerial competences. We describe the tool - Revas Business Simulation Game as a potential instrument facilitating change in competences, skills and attitudes, crucial on labour market.

**Keywords:**  
business,  
simulation  
games,  
high  
education

## 1 Introduction

Universities are looking for ways to equip their graduates not only with knowledge, but also, and perhaps most importantly, with skills that are desirable on the labour market. Particular importance is devoted to the development of competence-based learning, that transforms students from passive receivers to active constructors of knowledge (Fitó-Bertran et al., 2014).

A challenge for HEI is enriching curricula, boosting innovativeness, self-confidence and supporting overall development of students to inspire their skills and entrepreneurial intentions (Maheshwari et al, 2022). This can be done through the use of traditional methods and tools but a challenge is the implementation of more advanced, non-conventional and attractive tools, such as business simulation games. As an active-learning instrument, they facilitate achieving learning outcomes in a more autonomous way and at the same time acquiring skills that are more difficult and longer obtained through traditional learning.

Business Games rank to the category of Serious Games, enabling learning by playing within the use of software programs, constituting formal teaching or learning tool (Mafla-Cobo et al., 2020). That approach base on the use of computer games, which have educational content and enhance teaching and student assessment. New pedagogical approach of using virtual educational games is the latest and the most attractive way of learning.

The evaluation of the performance of teams or individuals participating in simulation games is based on several evaluation criteria related to the learning objectives (Koltai & Tamas, 2022). Mafla-Cobo et al. (2020) proposed simulator model of a game containing three modules: Marketing, Production and Financial, which is indicative of a wide variety of skills acquired, as well as the challenges presented to players. Participation in the game and the need to make diverse business decisions, which must be underlined - team-based, brings invaluable benefits from the point of view of developing skills and subject knowledge. However, it has a tremendous impact on social competencies, the importance of which from the point of view of educational outcomes is steadily increasing, while challenging traditional education systems.

The Business simulation game »Revas« presented in this paper, as an innovating serious game, enables making decision about a virtual company, is an excellent example of a learning tool which, by engaging participants, allows them to understand the business world better than the traditional approach.

## **2 Effectiveness of Business Simulations Games**

Business simulation games “provide comprehensive vision as proxies for real-world learning” (Grijalvo et al, 2022). Although business simulation games are mainly associated with the use of new technologies and IT, researchers have long been interested in their application for educational purposes. Klasson (1964) defining business game as “a new but still controversial methodological approach to preparing business students for responsible positions in business, industry and government”, indicated, that among universities and colleges - members of American Association of Collegiate Schools of Business - first games were already used in 1956. Over the years, with the development of technology and changes in the education market, new solutions have been introduced to allow experiential learning at every level of education, but especially in higher education. It is the graduates of higher education who, in order to meet the demands of the labor market and competition, are increasingly interested in acquiring the right competencies that will be useful regardless of the chosen career path.

Simulations support the development of soft skills required both, by university, and future workplaces (Grijalvo et al, 2022) (Levant et al., 2016), particularly as they involve decision-making in many areas, providing complexity and diversity in the necessary knowledge and skills.

Business simulations serve as a tool, that applies knowledge, and at the same time prepares for future professional activity. There are enough numbers of studies asserting, that they are an important tool to teach management (Lacruz, Américo 2018) and influence the change of behaviours or attitudes (de Freitas, Liarokapis, 2011). Hernández-Lara, Serradell-Lopez & Fitó-Bertran (2018) while analysing students’ perception of the effectiveness of business games concluded, that information processing decision-making and leadership were mostly enhancing skills. Moreover, the most valued were managing a company, improving its

competitive position, developing strategies, providing advice and reaching the goals of a firm. Other research points out decision-making, risk management, problem-solving, communication and teamwork (Costin et al., 2018). Not to mention other benefits related to the integration function as well as maintenance or improvement of the quality of social learning through the business game (dos Santos-Souza, Oliveira, 2019).

The advantage of games over the traditional educational process also lies in the role played by the teachers. Their main task is not transmitting knowledge anymore, but preparing for the game, explaining the rules, and during the games, they are to act as a mentor, to support and motivate, to encourage analysis and synthesis of results. Importantly, they do not assess, as the results are self-evident. This is important for the development of social skills because it makes students more independent and encourages them to reflect, evaluate situations and take responsibility for their own and team members' decisions. Of course, for trainers it requires good preparation and is certainly a challenge in terms of group problems and students resistance to engage (Vos, 2015), (Peterkova & Repaska, 2022).

Despite the undoubted advantages of the simulation games, there is not a complete agreement among researchers on their effectiveness. In 1959 Goetz referring IBM and McKinsey-Harvard Business Review games, pointed out the costs associated with the duration of the game. Systematic review of papers published in databases proved that there was limited evidence, that playing business games may change leadership behaviors or skills (Lopes et al, 2013).

Some results indicate that participation in the game, not only does not boost entrepreneurial intentions, but students may feel less prepared to start their own businesses (Pérez-Pérez et al., 2021). Henriksen & Børgesen (2016) referring to the impact of simulation on leadership noted, among other things, that it can be positive, under the condition that participants are allowed to engage in emergent non-formal and informal discussion.

The ultimate perception of the game by the participants and its effectiveness, is influenced by a set of variables - linked in general to the participant (like gender, nationality, cognitive style, previous academic performance, previous contact with

another simulated environment, etc.) and simulation dynamics (like simulation complexity, simulation duration, professor, debriefing, manual, method to evaluate the performance of simulated companies, method for selection of teams, etc.) (Lacruz, 2017).

### **3 Revas Business Simulation Game – assumptions and process of playing**

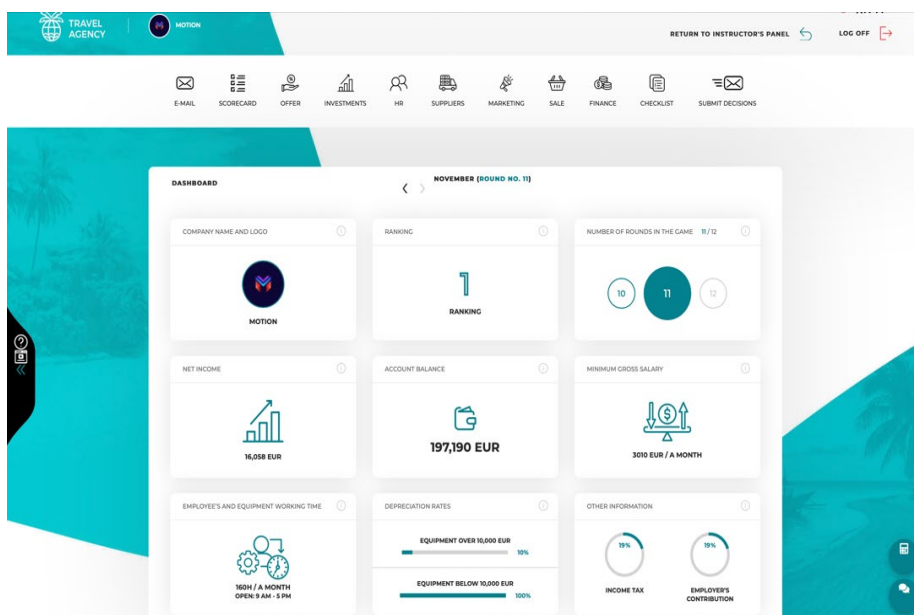
The simulation game used as an example in this paper is a serious game and although the main purpose of the simulation is education rather than gameplay, the mechanisms used have the same task - to lead the player to immersion, or in other words to the feeling of being in a simulated world.

The game enables players to set up and run their own virtual company. Users have a wide choice of industries and types of businesses in which they are able to manage, such as Travel Agency, Accounting Office, Beauty Salon, Boutique Hotel, Car Service and Repair, Factory, Shipping Company, IT Services, Farming Supplies, etc.

Revas Simulations utilize Experiential Learning Model with 4 phases of the cycle:

1. Experience – making business decisions
2. Reflections – market feedback
3. Conceptualization – analysis of outcomes
4. Experimentation – changes in strategy and further planning (Szczepaniak, Pitura 2022).

Decision making by players takes place under competitive conditions. All teams start their own business and run it for 12 rounds (calendar year reference) competing with each other - the game's algorithms compare the decisions of all virtual companies after each round (month). Simulations require decision-making in various areas of management (strategic management, operational management, HRM management, supplies, marketing, finance management). Figure 1 present the dashboard with tabs containing elements for each round decisions.

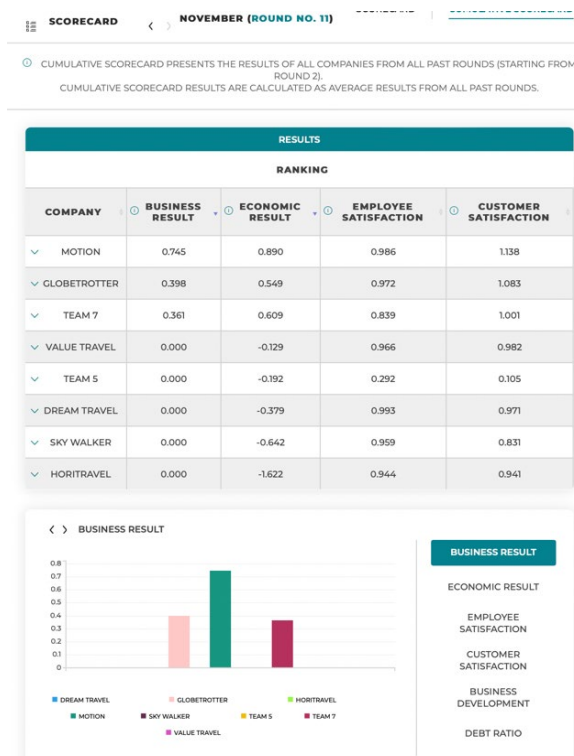


**Figure 1: Revas Business Simulation Game Interface**  
<https://revas.pl>

In the first round, teamwork rules and division of responsibilities are established, the company's name, mission are formulated, and a logo is drafted. Starting with the second round, the teams begin the market competition. Participants prepare an offer, which requires not only mutual arrangements, but also making calculations based on the market data suggested by the simulation. The offer also requires setting a price and a strategy for price promotions. An important area of decision-making is HRM and staffing concerns, which are preceded by the preparation of their workstations. Each decision in the simulation allows for the selection of quality options regarding equipment or services offered (3 levels of quality). Investment in workstations, equipment and amenities influence the outcome of a company. One of the evaluation criteria is the level of employee satisfaction, which is influenced by working conditions, pay and encouragement of their development. Another important part of the choice is to decide on marketing - traditional or online tools. The last, but very developed part regards the finance. Players monitor a ledger, a financial report, and a bank account history, having a choice of various financial support tools, such as credits or emergency loans. During the courses students deal

with banks, accounting, and financial support all virtually, as the game is programmed. Knowing the fact that games are programmed to provide finances are regulations based on real life conditions, students will have zero stress on being concerned about their real financial losses.

After each round outcomes are presented. Part of the results are public and published in individual tabs, so the team can accurately analyze the position of their company in relation to competitors, other data is revealed only internally to each company, providing an essential tool for strategic and operational management. The outcome – business result is a sum of multiplying 5 ratios: economic result, employee satisfaction, customer satisfaction, business development and debt ratio (Figure 2).



**Figure 2: Dashboard of scorecard of Revas Simulation**  
<https://revas.pl>

These ratios should be strongly emphasized, as there is no single best strategy that will work in every game. There is no key to correct answers, because you never know what the competition will do, which creates a big advantage for the game, but on the other hand is a challenge for the trainer. That is because it requires clarification, that the simulation reflects real market conditions, and even if the team has made the right calculations and has prepared the offer carefully, there is no guarantee that it will acquire a leadership position, because others may have offered something better to customers.

Trainers also have a limit on how much they can help students. They can discuss the legitimacy of using specific solutions in the simulation situations, but can't be 100% sure of predicting and saying what the results of a particular action will be, because they are unable to see the movements of competing teams.

The decisions of most players in a game are based on their strategies, desires or planning to achieve success compared to others, in order to strengthen their own reputation. This often results in commitment far beyond requirements imposed by the game instructor.

When it comes to the effectiveness of the game in terms of achieving the intended benefits, it should be mentioned, that if the level of the game is too low or too high compared to the level of knowledge and skills of the player, a decrease in motivation is very likely and no further desire to participate in the game. The range of decision sophistication increases with each round (until round 7), giving participants the chance to gradually increase the number and difficulty of decisions.

Simulations allow a great deal of flexibility in the schedule of rounds; it is the trainer who decides the schedule for advancing the game to the next round. Therefore, it is important to mention another added value of the game, namely cooperation between members of each team (company) but also between teams (competitors) and the instructor and teams. The development of soft skills seems to be crucial, as participants must find a balance between mutual competition and fair play and adherence to the norms of the game.



The system provides the same problems that entrepreneurs face in their real life since the beginning of the economic activity. But the only "stress" students have in all this simulation is to successfully manage and deal with the situations that he or she will face tomorrow in the real life.

## **4 Benefits of Business simulation on the example of Revas Business Simulations Game**

### **4.1 Students benefits**

Analyzing the advantages, business simulations primarily benefit the participants and, with regard to the subject of this paper, the students. Revas Simulations is a very effective method of gaining knowledge in business management at institutions with economic, business or managerial focus, mostly HEI's but also other organizations. According to the authors, the most significant benefits that distinguish participation in the game from other active learning methods are the following:

- allow students to better understand business processes,
- develop strategic and critical thinking and support self-analysis skills,
- advance communication and interaction skills,
- expand holistic thinking,
- verify predispositions and readiness to run own business,
- foster the improvement of stress management skills,
- allow participants to learn from their own experience and failures,
- enable working online and in international environment,
- prepare for the labor market requirements.

It should be added that the above list does not exhaust all the benefits of the game, but corresponds to the ones most often noted by the authors, who are also simulation trainers.

Business simulation games can be treated as economic, management or even sociological, psychological labs to analyze individual behaviors and decisions in different situations while "doing business". Students' interaction, discussion and

even arguments, appear during the simulations while they try to predict the movement of the opponents and make smarter decisions than them. They try to predict the decisions of other competing teams in order to win the game. Taking part in the game allows participants to experience the opportunity to manage business, which leads to them knowing their strong and weak points as a group and as individuals.

## **4.2 Teaching benefits**

Developing teaching methods by business simulation games is the newest way of enhancing cooperation, communication and analyzing skills within the group of students.

Authors, as trainers who play the Revas simulation, notice mostly benefits, not only for students, as discussed in the previous section, but also from the point of view of the implementation of the educational process. Tools like Revas game attract students more into courses and perfectly match their desire to incorporate technology and games with learning. We are witnesses to the lack of physical interaction and communication that younger generations are having recently, especially after the changes induced by pandemic, which makes it necessary for us to redefine the traditional methods of education in order to achieve the set educational goals. Therefore, organizing and implementing this virtual way of teaching has already made and is still making an impact in students' interest and curiosity for learning, and at the same time empowering the quality of the new academics – focused on innovativeness.

## **4.3 Environmental and Institutional benefits**

Being aware of the new policies toward environment according to inner institutional analysis at Biznesi College and Business University in Wroclaw, we have clearly noticed a positive impact, that these simulations have in the environment, directly and indirectly. Students may learn at the same time to play from labs, classrooms, homes, or wherever they want without the need of being physically in a certain place, which will affect their pollution footprint. Developing abilities to organize, work, share responsibilities, and understand the business internal and external factors, are

the main points, which institutions should focus on. Building a long-term strategy, planning in advance and being intuitive are just the core of the soft skills that students must gain in their curricular.

Moreover, enriching institutional curricula with possibilities to participate in business simulation plays a vital role in gaining competitive advantages. Students, especially, but not only, of business universities, pay attention to the practicality of educational programs, because only these can give them a good start in their careers after graduation.

## **Conclusions**

The use of modern technology in the form of simulation games benefits the competitive position of universities, especially in the case of business-oriented universities. Including such courses in the study plan, increases the attractiveness of the offer among candidates, but also the reputation in the business environment. Involvement in simulations requires training a select group of teachers, for whom it is also a form of motivation and recognition. Their competencies develop, moreover, participation in the games is a valuable experience and a departure from the routine of traditional classroom management. From the students' point of view, participation in a simulation is a more attractive form of learning and an opportunity to develop competencies that will be essential in their careers.

This paper leads the foundation to further research, which should focus on the real effect of the game in strengthening competencies and skills. Despite many studies on the subject, the results are still inconclusive and leave a gap for further analysis. The great advantage of simulations is the ability to play both on-site and online. Both options, however, produce results in terms of achieved learning outcomes and competency development, although additional research could be conducted to compare this accurately.

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