Chapter 10

Challenges of Business Simulation Games — A New Approach of Teaching Business

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Additional information is available at the end of the chapter

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Abstract

Serious games are part of the new emerging world of education environment that is based on sophisticated technology with elements of entertainment. They have been seen as good supplements for supporting the learning processes due to their capability to increase visualisations and challenge the student creativity. They have the potential to significantly improve training and education activities and initiatives. As a part of serious computer games, business simulation games support training and learning focused on the management of economic processes. They have been proven to be useful in empowering and mediating learning business content. This chapter addresses the simulation business games used in the educational process by analysing selected popular games regarding their properties that are considered as important in the learning process. The first part presents a short introduction in the field of business games and the approach used in selection of the studied games. The next part provides a review of related articles and brief overview of the state of the art that has guided the selection of business simulation games to be analysed and assessed. The game parameters used in the assessment have been defined and described. The analysis and the assessment report are followed with brief concluding remarks.

Keywords: Serious Games, Business Simulation Games, E-Learning, Problem-Based Learning, Education

1. Introduction

Digital games have the potential to change the landscape of education as we know it. From the early isolated reports on conferences and books reflecting about possible application of digital games for learning, more and more practitioners and researchers embraced the idea, including the e-learning community [1]. However, today serious games are accepted terms for

games with an educational intent despite the lack of supporting evidences about their effectiveness in the learning process. Their popularity in the past decade has increased significantly and continues to increase [2]. It is widely accepted by the educators that the games used in education should be engaging, although not necessarily funny, while the learning can be implicit or explicit. Despite the fact that many games to be used in education are now readily available, commercial off-the-shelf, no uniform game pedagogy was developed and it could be said that does not exist. It is safe to be assumed also that in the literature a deep research is missing, which links the games to various properties with the type of learning [3]. Earlier games tended to be based on the behaviorist model but there were other games that tried to incorporate experiential, situated and socio-cultural pedagogical models [4]. Among the researchers in the field, it was widely accepted that the learning outcome, when the games are incorporated in the educational process, is dependent upon the appropriate pedagogy and the underlying game mechanics [5].

Serious games are also used as part of the treatment of some mental disorders such as attention deficit in children, as a way of training for keeping long period attention [6]. Several authors also point out that games can be used to improve self-monitoring, problem recognition and solving, decision making, better short-term and long-term memory, increase social skills such as collaboration, negotiation and shared decision-making as pointed out in ELSPA [7] and by Mitchell & Savill-Smith [8].

As a part of serious computer games, the games known as business simulation games support training and learning focused on the management of economic processes. Business simulation games bring effective methods of learning and experience through business challenges that students usually need to meet before setting foot in the real world [9]. In a business simulation game, the participants can select different decisions without any fear for a real loss to the organization in case participants make mistakes. Participants can select actions and can have experience regarding the consequences of those actions.

The selection of business simulation games for assessment purpose has been made with an intention to demonstrate what kind of business knowledge and skills can be acquired through the gaming. The discussion that follows the assessment points to the limitations of the selected game set. Overall, with game parameters presented and assessment discussed, this chapter attempts to bring educators closer to the real expectations they can have, regarding the achievement of the learning objectives, when an adequate combination of business simulation games and training is applied in a particular education process.

2. Overview of the current state

2.1. Brief introduction in the area of business simulation games

Wikipedia explains that business simulation games are not a new phenomenon. Computer-supported business simulation has an origin in the military war games and came into existence during the late 1950s [10]. By the beginning of the 1960s, 89 different business games have been

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developed by industrial firms, business associations, educational institutes, or governmental units [11]. They have been used as a learning tool for teaching management [12, 13]. They are regularly in use at the universities with business and management programs, and in particular at the world's major business schools. As an example, the University of Washington has been using business simulation games in classes since 1957 [14]. As an educational tool, business simulation games have grown considerably in past 50 years and have moved from being a supplemental exercise in business courses to a central mode of business instruction [15].

Up to the present time, numerous business games appeared to be of different types or genre. To establish the adequate comparison between all of them and to make the proper survey, it is almost impossible due to the expanding list of business games, as new games are growing day to day. According to the studied literature and Internet reviews, this chapter attempts to present the survey of several games found to be typical for the business environment as they cover the most important educational content that can be gamified.

2.2. Study framework

Business simulation games can be usually presented as a training technique in which participants consider sequence of problems required to be solved by them or to take decisions. The main component of most of the games is the simulation of the ecosystem. They model the realities of the business world by simulating basic – and in some cases advanced – business theories and practices in controlled game environments. Because they simulate the real-world system, they can often be used as a teaching method for executive education as well [16]. The benefits of business simulations are in the possibilities of the students to experience and test themselves in situations before encountering them in real life, give them the chance to experiment and test hypotheses. Within the business simulations offered within a serious game, subjects seem much more "real" to the students or learners than when taught passively from pdfs, PowerPoint, or from blackboards. Extensively, business game simulations in professional world are used most frequently. The game applied is usually based on a request for sequential decision-making exercise structured around a hypothetical model of the operations of an organization. The participants can select different decisions without any fear for a real loss to the organization in case mistakes are made. Participants get experience through the consequences of those actions that can be positive or negative for the game purpose or goal. The learners/students are using their newly acquired skills and knowledge by applying them to a competitive challenge provided within the game.

Business simulations are also in experiments related to learning and cognition. These experiments and the studies that followed have revealed that people often have an attitude for mastering systems without the necessity to comprehend the underlying principles [17]. As a consequence, business education is nowadays criticized for being mainly theoretically driven and without a component that triggers critical thinking, creativity and innovation [18, 19, 20]. These properties, which are considered as major challenges in university-level education nowadays, were found to be missing in many graduated students. As the process of the globalization and liberalization of the business world has changed the types and qualities of the human capital required by the corporate sector, the business graduates are expected to

have not only theoretical understanding of business but also communication and thinking skills [21], in addition to the ability to apply the multi-disciplinary knowledge acquired during their study. The current popularity of business simulation games in education follows from these findings. The interest in using simulation games is also driven by the effectiveness in presenting knowledge and theory. Instructional simulation researchers believe that a game-based method is effective because of the full-mind involvement in the learning process [22]. The activities in simulation games used in the area of business teaching usually involve observation and reflection, the creation of concepts, the integration of observations into theories and the application of theories into decisions and problem-solving. Students learn through the sequential process of cause and effect, and learning by doing. The underlying sequential processes are intended to motivate the students to explore, to experiment and to learn independently [23].

2.3. Terminology used

According to the variety of literature in this area, several mixed response about the definition of the business simulation games and its terminology is possible to be found.

Wikipedia (2014) [24] gives the following description of business simulations games: *They are games that generally focus on the management of economic processes, usually presented in the form of a business process. They allow students to practice business by use of relevant economic terminology and concepts. In most cases, the term business (simulation) game and management (simulation) game can be used interchangeably and there is no well-established difference between these two terms.* Wikipedia also mentions the approach of Greenlaw et al. (1962) [25] in game definition as a sequential decision-making exercise structured around a model of a business operation, in which participants assume their role of managing the simulated operation offered in the game. Keys and Wolfe (1993) [26] have defined a management game as a simplified simulated experimental environment that contains enough illusion of reality enabling real-world-like responses by those participating in the exercise.

Other authors define business simulation games as games that are designed for a primary purpose other than pure entertainment [27]. Serious games are considered by Squire [28] as an important response from the education technologist to the "digital natives", which is a generation of students who are raised on digital gadgets and interactive games. For them, the expectation to have interactive experiences in the education media seems very natural.

There are also other views that contribute to the conclusion that there is no pure agreement regarding the definition what exactly can be defined as business simulation games. However, in this chapter for the purposes of the study carried out the following definition is used: Business simulation games are considered as a type of serious games that focus on simulating management or business processes, using the economic terminology and real-life business environment simulation.

2.4. Use of the business games (The "Why and How")

Business simulation games are used in several educational areas; however, their purpose is to provide effective training. Schurr and Thole et al [29, 30] state that usage of business simulation

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games is mainly focused on acquiring skills as they permit students to experience and test themselves in situations before they encounter them in the real life; in addition, they permit students to experiment with business hypotheses and test them. Faria et al [15] state in their study based on review of the 304 business simulation educations and learning articles that the capabilities/properties of the business simulation games are related to provision of:

- Getting experience,
- Learning strategy
- Getting decision-making experience,
- Getting better learning outcomes,
- Getting teamwork experience.

Each of these properties can be found in more than 20% of the business education and learning articles published in Simulation & Gaming Journal [15].

However, other authors, e.g. Whicker et al. [31], argue that business simulation games are used merely to enhance students' decision-making skills, especially under conditions defined by limited time and information. They vary in their focus from how to undertake a corporate takeover and how to expand a company's share of the market. Typically, the player feeds information into a computer program and receives back a series of optional or additional data that are conditional upon the player's initial choices.

Business simulation games can be also potentially used to manage skills mediation. Riedel [32] pointed out two types of skills that can be mediated or promoted by usage of games for business and industry: soft skills (team building, communication, inter-personal skills, negotiation skills, creativity, collaboration skills, learning skills) and hard skills (product/service knowledge, sales, discipline-based training, customer service, project management, decision-making skills, innovation, risk management, health and safety). Here it should be mentioned that: "the increased usage of the business simulation games [15] has been influenced by the usage of the emerging technology of Internet and the computer technology power".

The Internet as a vehicle combined with inexpensive hosting and memory storage services has triggered the proliferation of the distributed computing to happen as the national and even international reach for business simulation game providers became very easy. This perspective of business simulation games development enables the grouping of as: web-based and desktop-based group of business simulation games. The business simulation games also may come in different shapes and sizes. Some business simulation games are small and require no download from the Internet and can be played on-line. These types of games are run by modern browsers which have latest java script enabled or fresh updated flash player. Some of them can be played on user's computer once they have been loaded. In this group, it could be found that good examples of small business simulation games do not require a download process and are often described as web-based games. Then there are other business simulation games that require to be downloaded in order to play them. These come in two types: the stand-alone

games that users are playing by themselves once they have downloaded the game and installed on their computer (often described as desktop-based), and the multi-player business simulations that players play online with others once they have downloaded the game. These business simulation games are the most intricate, well designed and engaging. To manage and to play this kind of business simulation games, the following must be done. The game has to be downloaded (with the purchased license, if the game is commercial type) to the user's computer and afterwards an installation must be done. Once the user has the game installed on his/her computer, the playing is enabled. While user's computer is connected to the game's serves online, the multi-player environment is created by other users and amazingly, there can be over 100,000 users or more playing one of these popular business simulation games at a given time, each of whom is running the game they downloaded on their computer with a connection to the central game servers [33].

In some cases when players want to play a massive multi-player business simulation game that requires to be downloaded and installed, they are usually asked to set up a profile at the game's website first, before they download the game. When the game connects to the game's site for the first time after it was installed, the software recognises the user's computer and the game is ready to be played. However, not all business simulation games are available for download; they can also be available only in a form of CD-ROME or DVD format accompanied with an installation guide and game tutorial.

The proliferation of accessible business simulation games has enabled the educators to be capable to set up and conduct business simulation exercises easily and on almost on no cost. Student access to the Internet is pervasive, which makes the administration of the business simulation games to be easy. In addition to the technical advantages offered by the Internet-based simulation games, students are in the same time accustomed to communicate and to play on the Internet. They interact within the social networks such as Facebook, LinkedIn. They play MMOG (Massive multi-player real-time online games). Among them, the well-known World of Warcraft (www.worldofwarcraft.com) is very popular. Faira has found that the students expect and prefer computerised simulations games to be administered in this fashion [15].

3. Selection of the game parameters

In recent years, much debate has taken place about the classification framework for business-simulation games designed for teaching and training purposes [34]. In fact, many teachers or tutors who are using business games as an educational tool for teaching business knowledge or skills often need to make a pre-view or assessment of the game in order to determinate whether the game will accomplish or fulfil their learning objects/goals. Since most of the educational games require constant interaction, teachers need to select the game carefully, as an appropriate training tool with properties that meet their curriculum targets.

Since the first adoption of business games, their classifications have been constantly changing due to the changeable forms and origins of business games, as well as with technology

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development. One of the first classifications in terms of the design characteristics was introduced by Elion [35] and Greenlaw [36] (total enterprise or functional, interacting or non-interacting, computer or non-computer) and according to their accepted use, e.g., either

- as part of a general management training program;
- or teaching new techniques or procedures for selling;
- or for conducting research (e.g. on the behaviour of systems, on the decision-making processes of individuals);
- or for studying the interaction of individuals within a team.

Many of these early, hand-scored business games did not make the transition to the era of the desktop computer. Instead, new, computer-based, business-simulation games appeared at the start of the new digital era [37]. Important work in this area was conducted by Keys and Wolfe [26] in their attempt to classify computerised, business management simulations. They produced an overview of business games based on the Greenlaw taxonomy [36]. However, an important finding in this work was the multi-dimensional character of business games and the possibility to classify them in a number of ways. Later, many authors were trying to classify business simulation games according to their content environment and their educational goals. For example, Wolfe [38] established his classification of business simulation games using three main fields of application:

- Top-management games
- Functional games
- Concept simulation games

This chapter uses the classification of business simulation games as described by Jerman [39], based on Keys' [26] and Biggs's [40] classification of business simulation games. The classification properties are presented in two major groups. The first group – **the technical classification** – presents the properties derived from the technical data that describe the business simulation game and the second group – **the usability classification** – presents the variety of dimensions that describes the types of the usability characteristics important in the training and education process. All properties are described in the following sections and have been used in the Table 1 [39].

Technical Properties

The technical properties are defined by the following technical dimensions:

- **Web-based/desktop:** Whether the game can be played via modern browser or with installation package.
- **Distribution:** Whether the game is free for use, played by license, on cd-rom, or run by downloaded application/client.
- **Year of publishing**: The year that game was started to be available for public use.
- **Users:** How many registered users the game has (up to 2010)?

- **Label:** The name of development team.
- **Single/multi-user:** Whether the game can be played by one or many players.
- **Dimension:** Whether the game is present in 2D/3D environment.

Usability Properties

- **The time period simulated:** For example, day/week/quarter/year.
- **Industry-specific or generic:** In industry-specific game, the authors attempt to replicate closely the actual industry. In generic games, only general business relationships are replicated.
- **Degree of complexity:** Game decision input variable complexity, or the computer model complexity.
- **Functional or total enterprise:** Designed to focus specifically on problems of decision-making as seen in one functional area or designed to give participants experience in making decisions at a top executive level and in which decisions from one functional area interact with those made in other areas of a firm
- **Competitive or non-competitive:** Whether the decisions or participants influence the other participants or not.
- **Feedback system:** Whether the results are shown by gained scores, experience points, upgrade level or summary reports.
- **Deterministic or stochastic:** The stochastic alternative is probabilistic, including chance of elements.
- **Briefing systems:** The level and usability of briefing screen.
- **Learning objectives:** Types of learning skills that can be obtained, e.g., business strategy/strategic management, finance.
- **Background knowledge:** Whether a basic/advanced or none business knowledge is recommended in order to play a game.
- **Interactivity type:** In an interactive game, participants respond to the questions at the computer, receive an immediate response and then submit additional decisions. In a non-interactive game, decisions are submitted to the game administrator.

3.1. Selection of business simulation games for the assessment

The list of business simulation games that can be found on Internet is countless. Wikipedia [24] provides a list of several hundred business games ordered in alphabetical and chronological order. The problem of this list is the fact that they are considered to be more entertainment-oriented than edutainment and as a consequence, their use as a learning tool is questionable. The classification as the group of educational business simulation games requires much more. The game has to be realistic, engaging, motivating, popular and user-friendly and with clear educational objective [39].

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The selection of business simulation games analysed in this contribution was based on a review of business-game-related articles that address educational problems and issues related to particular business simulation games. The selection was influenced by the results of two projects: the COSIGA project and GALA project (http://www.elios.dibe.unige.it/gala). Two other authors [32] have listed another selection of 39 serious games that address educational topics such as finance, management, product management, industry management, leadership, etc. The revision of the mentioned lists enabled the selection of games that can be considered as representatives by their popularity and by the topic addressed (considered as important in the area of management education as well as in politics). Once the selection was completed, our research team started to play them and started to improve the results of assessments. The following games have been selected.

3.1.1. eRepublik

eRepublik (www.erepublik.com) is considered as a massively multi-player online strategic game that combines social networking elements (Facebook, LinkedIn, etc.). It was developed by Republik Labs. Launched in October 2008, the game is currently translated into 18 languages. The game itself is a free-to-play web-based game, which means it can be played absolutely for free via the Internet (the registration is required), and it runs in most modern Internet browsers. It was developed and programmed using PHP program language and Symphony framework. eRepublik has spawned a number of similar games due to commercial success.

The game is set up in a mirror world called the New World. The players take the role of citizens where they can participate in daily activities. As the citizens of the New World, they can choose which country they wish to join. Each country is named after an actual country in the real world, and is generally located similarly according to the real world. The player who has German nationality will probably join to Germany, and Italian to Italy, etc. After joining to their desired country, players can act as employees, where they can own a business, run a factory, start a political activity, form a political party, write newspaper articles, run for the president, become members of Congress or country presidents, where they can help formulate national economic and social policies as well as initiating wars with their neighbors (as a virtual version of real-life countries) and/or tread the path of a private citizen working, fighting and voting for their state. In the beginning of the game, each player has to seek for an employment at a company within the country he has joined that will provide him with monthly salary and daily needs. While becoming an employee, he/she is offered the opportunity to be trained as a soldier for his/her country. Training and working at a company are done on a daily basis. The game has an official eRepublik wiki (wiki.erepublik.com) and official blog (blog.erepublik.com) where players can obtain all the information that may help them to get deeply involved into the game of eRepublik.

To begin a game, each player can get the mentor (or watch video tutorial), who guides him/her through introduction of eRepublik and provides an explanation of the basics of the game. The game consists of four modules: My Land, Politics Module, War Module and News Module. In My Land, a player has a patch of land where they can construct various buildings

(farms, factories, storages, etc.) that can be constructed with a local currency or gold. The effectiveness of economy buildings depends on the natural resources which nation (country) has. In Politics module, a player can join a party, when they reach a certain level. If his/her political party or party campaign become successful, he/she can take the higher role such as a congress member or a president of the nation he/she belongs to. On the fifth of every month, eRepublik holds presidential elections, on the fifteenth the congressional elections. All activities that are connected to the warfare systems are situated in the War Module. When the president or the congress of the country proposes a Natural enemy law, a war on other countries can be declared. Players are able to train as a soldier and be ranked up in the military by fighting battles or go to war when he/she signs up to army of his/her country. Wars are taking potentially essential role by increasing the economic or political power of the country. A nation that has experienced and battle hardened citizens can become a global power and grow global economy business.

The role-play of the world of eRepublik consists of combining the capabilities of the above modules to reach goals and become leader in one or more domains. Using newspapers in the News Module, they can share their political ideas and changing and shaping the directions of political system and beliefs. The congress of a country sets taxes to enforce economic policies. To wage successful wars, the economy of a country has to sustain it and citizens have to be motivated.

Regarding the graphics, the game has no advanced or attractive graphical interface. It is created with merely few visual elements and is primarily text-based in nature, yet overall the game is nicely illustrated. The game also has a sleek interface, so it is very easy to find what you are looking for.

The eRepublik is aiming to do the best to reflect the nature of 21st century business/political world and 21st century life in general. The player will not learn the all expected business "know-how" abilities and processes as the time allowed for playing is limited (the game can be played from 10 minutes (14 minutes equals one day in eRepublik world) up to 15 minutes per day). The nature of the business in the game is politically oriented.

The workflow functionality of the game is a basic simple click-to-do, but it provides a great source of income for a player. Regular "working" increases players' experience level, and the higher level you are, the more things you can do. The game requires a "long-term" regular playing where players embrace the full role of managers and politicians. The main problem that can be noticed is lack of specific situated business or business-project tasks that could be potentially involved.

On the other hand, the game of eRepublik provides some interesting psychology aspects. One nation can be in favor with the real life being either political or economic situation in the New World. Just for example, in the real world, Slovenia and Croatia are negotiating for years about Adriatic open-sea border agreement, which is causing potential political and economic tension between them. The potential players that were solving this problem can simply declare the war and take over the other country through military invasion or economical destruction of the weaker country.

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Overall, eRepublik is a strong multi-player simulator from the current world, based on a website and textual elements with a search enabling easy navigation, well reflecting the real world where citizens of different countries interact.

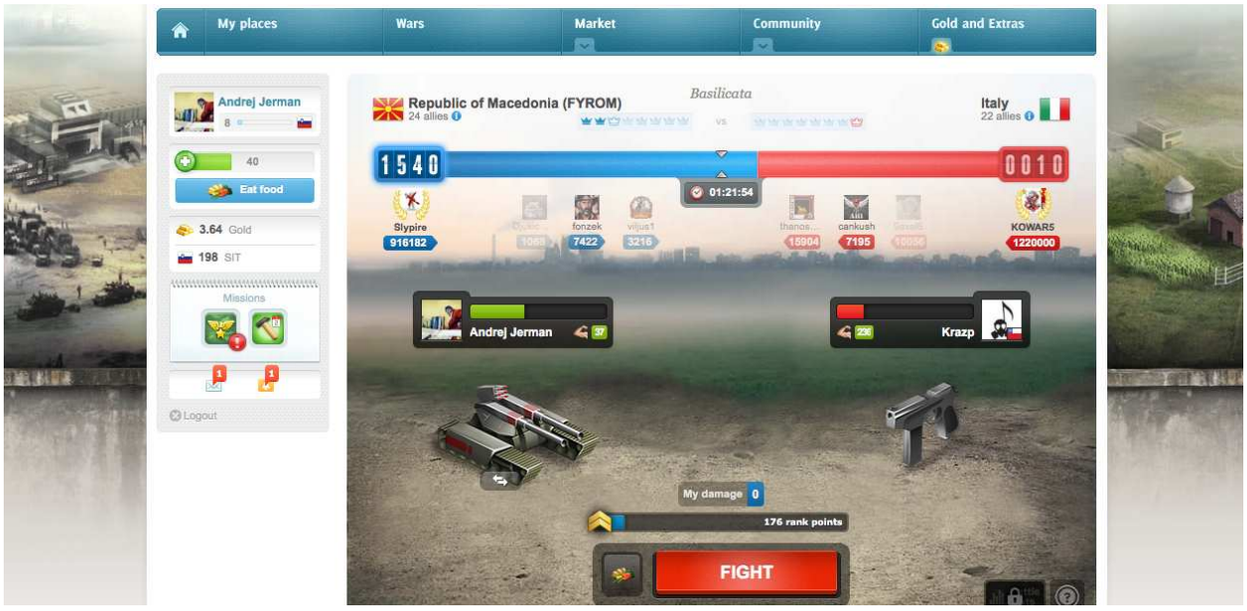

Figure 1. eRepublik (A screenshot of eRepublik game, showing the current war between the Republic of Macedonia and Italy)

3.1.2. Virtonomics

Virtonomics is another business-strategy-oriented online (web browser) game, played as a MMOG game where basics of management are tested. It is an Internet game with massive players, which reflects wild range of interests. It has been developed by Russian developers, and it was launched by Virtonomics team in May 2009. For 3 years of its existence, the project managed to join more than 400.000 users in Russia, Ukraine Germany, Belorussia, Kazakhstan, Baltic States and other regions (Wikipedia, 2013). It is designed for fans of the economic and strategic games, and to study the basics of management. The game itself requires an understanding of laws of real-life economy, business and finance, yet players do not need a deeper understanding of economics or any special background education for taking part in this game. The game is helpful in meeting interesting people with common interests and making useful connections (Jerman Blazic & Arh, 2013). The game can be presented as a unique business community where participants can find new business partners and potential employers. Economic experts can find Virtonomics as an inexhaustible source of useful observations and a place where they can try different business strategies. Virtonomics is versatile. It combines logical and business gaming, real economy simulation and economics strategy. This is a game where player's knowledge and efforts are the source of real income. There are a few fields of economy represented in the game, which has more than 100 different products. New countries and manufacturing sectors are being introduced as well as products and productions. The main purpose and aim is managing a company, where a player has to compete with artificial

intelligence agents as well as with other players participating in the game realms from all over the world. Currently, there are 700,000 registered users (http://en.wikipedia.org/wiki/Virtonomics), (Virtonomics is translated to English, Spanish, German, Russian, Chinese and French and more). It is integrated with popular social networks (Facebook, LinkedIn, Twitter.). From all over the world, players can cooperate, compete, form a partnership and have price wars for the products which they sell, etc. It is a unique system for business training. All the possible industries of real economy are represented in the game: agriculture, mining, retail trade, scientific research and others. Each player is free to choose his own strategy: whether to build a complex holding and participate in several market competitions or to carve an individual and original way.

When starting a game, a player can choose and participate in the game realms where he/she will run his/her successful business. Currently, the game has five realms – Vera (Russia), Olga (Russia), Mary (English, France), Lien (English, Canada) and Anna (English, France, Canada, Russia). Each realm has its current characteristic: number of current companies involved the turnover value, technology level and the countries that are participating in the game realm. Dynamic movement is tested, when slowing down with the business, the chances of bankruptcy is increasing. Quick decisions are player's key to success. For those who like everything exclusive and equal game opportunities, there is a separate game world (the Anna Realm) functioning according to the principles of a subscription model (free of charge for 10 days, after that subscription starts from 8.25$ per month). All achievements depend on the player's capability of planning, thinking and implementing. The fight for survival begins in the very first moment when the player registers his/her own company and creates the working office. For beginners, the Virtonomics offers to a player a gift: a company left from "your uncle", with all the needs to start the capital in a full-progress business world. It does not matter which strategy the player will choose (adapting the old business or start a new one), the main goal is to establish and make a profitable and successful business. The opportunity is given to a player to become a tycoon, in order to develop his/her own company, competing with thousands of real components, winning the new markets, providing financial and political power of its corporations. To do this, a player has to engage in trade, manufacturing, research, exploration of natural resources, agriculture, trade in the currency market, manage personnel, finance, marketing, logistics and other business processes. By controlling the corporation, a player must hire and train stuff, establish sales and deliver, monitor the activities of competitors, improve the quality of his/her products, enter into business alliances and more. The game runs on virtual money. Every player receives a sum at the very first registration. This fund is used for the construction of business units, the payment of expenses and investments. Money that is being earned can be used for development of the company. The game can constantly grow. New countries can be created; new industries, new products added and new type of productions can be implementing.

The Virtonomics as any other MMOG game takes place in its own game world as a mirror of the real world. Game world is built from cities, woods, fields and farms. Several cities with similar profit tax are creating a region. Several regions with similar custom duties create a biggest economic unit – a country. All the rules from a real-world business are present, such as the correlation of export and import duties expresses development priorities for each

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country. The game is turn-based, which means the game can be played without staying online for full time. Visiting website once per day for 30 min makes enough time to completely review the player's business status and challenge of the new tasks. The game is a sort of business simulator, where a regular player can offer to the "serious" players to obtain different specific skills in management, marketing, economic cooperation, business optimisation, finance control, etc.

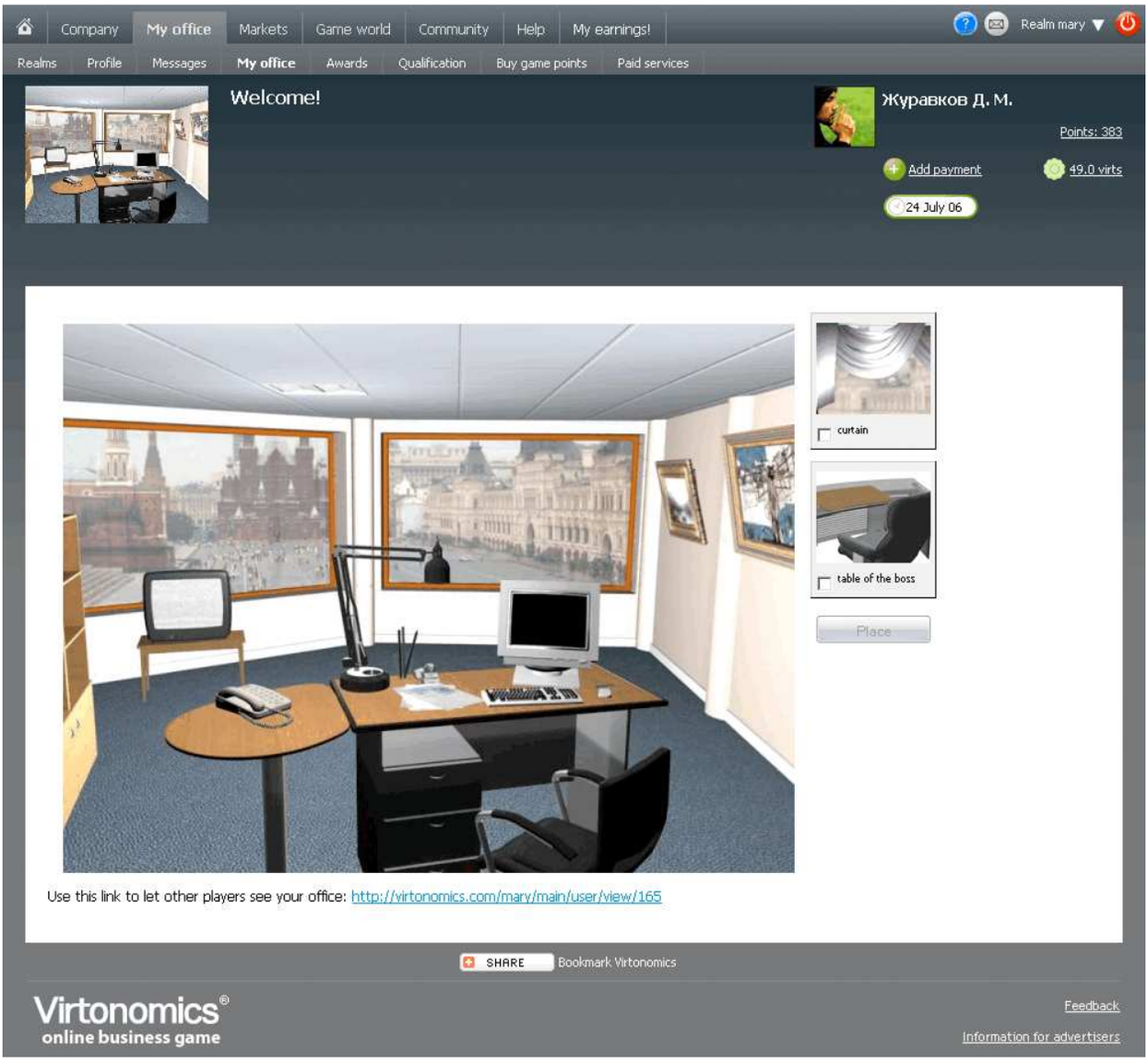

Figure 2. Virtonomics (Screenshot from the online game Virtonomics – player's equipped office).

Graphically, game is very poor. Virtonomics is a strictly text-based game with minor graphic elements. Visually, it looks like a wide complex forum community. The lack of realm maps and city maps is well noticed. The menu bar consists of seven sections: Company, My Office, Markets, Game world, Community, Help and My earnings. Each section has a sub-menu bar.

The most activities deal with the first three sections. In the "My office" section, a player can read messages, change the profile, restart a business, monitor the realm, study the reports, manage the paid service, etc. In the "Market" section, a player deals with markets like: Enterprise market, State enterprise market, Franchise market or participate in Enterprise auctions, award auctions, gift shops and deposits.

Virtonomics is not just a web-based online game, it can also be considered as a training system. It might be very useful for the students of business schools and economic colleges, as well as for already graduated managers who want to know more about the economic principles in practice and try themselves in various business situations. There is a market research that needs to be done (study and review reports to begin with), managing the retail and suppliers of products and on the other side, training of staff and pricing the players' purchased goods with reference to existing market's sales (both local suppliers and competitors), qualities and brands of the goods. All this characteristics can refer to the overall review that would describe as the "not-so-user-friendly" web-based business game. Many business schools and universities recommend Virtonimics as a unique business training simulator for modeling various business strategies and tactics, solving business cases, as well as a unique business community where users can find new business partners and potential employers. Economic background knowledge is well recommended, yet is not necessarily required.

3.1.3. Business Tycoon OnLine

Business tycoon online (bto.dovogame.com) is an innovative, well-known, massively multiplayer online game that originated in Asia. The game supports thousands of players simultaneously. The game has been developed and launched in 2010 by Dovogame. Playing a Business Tycoon Online (BTO) game is absolutely free of charge with no instillation required. It can be played on almost any computer with Internet connectivity and modern browser supporting Adobe Flash Player 10.0. It is designed as a business simulator where players must rise to the top of the social ladder as industrial tycoons. The players take the role of entrepreneurs who make their way by living in the Liberty City. In the tough business world, a player starts his/her own business and breaks through constant challenges to eventually end with building up a universal corporation or a powerful business empire. BTO comprehends a variety of business items that are being simulated through the game: realistic financial accounting, business interaction, trading and commerce processing, designing empire buildings, and even "shady" business deals and corporate sabotages.

In the very beginning of creating the company in the world of the Liberty city, players can open more than 100 different kinds of stores where their success or failure is in their hands. In addition to opening the stores and running them successfully, the players need to recruit employees and arrange their training. Every day, different kind of business meeting will be required to attend. The performance in the business simulation game will affect the Directors' impressions that players will make. In order to become well-connected socialites of Liberty city and expand the player's network, players are obligated to widen their social circles and interact with other entrepreneurs around them. When faced with fierce market competition, the player is making preparation for any and all challenges that will come on his/her way.

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The game itself is played in the strategy-oriented nature where the business decisions and leadership are tested in the direction of the progress of the game. By recruiting smart secretaries brings you benefits where they can help you to improve working efficiency. Each secretary is presented as an attractive female drawn character model, showing what kind of impressions are they giving, and background info about their private life (hobbies, interests). On the other hand, with good leadership skills a player can increase his/her own company's revenue. The objective is creating your very own company in one of four industries (Entertainment industry, Sales industry, Catering industry, Service industry), from a single shop to a major large company with hundreds of employees. In Entertainment industry, a player deals with managing stores like Jazz clubs, arcades, Billiard Halls, while Casinos and Horse Racing courses await entertainment tycoons. The management of Sales industry can be difficult but it is bringing a big payoff. Player's engagement is dealing with open markets, bookshops, gift shops and eventually shopping malls. In Catering industry, the player meets the world of hotel and resorts business. Service industry involves a management of service-related stores such as barbershops, massage paroles and tattoo shops. Depending on which industry a player will choose, he/she will be limited to a handful of stores he/she can open and to each store special benefits are tied to it. For example, if a player chooses Sales industry, he/she will enjoy a 5% production and raw material supply rate increase from the player's factory.

By gaining more experience and success, the player receives level points and rewards. Being a successful businessman in Liberty City will not bring the participant to play an easy task, it will certainly involve him in managing store fronts, factories, and training employees, building relationships with the media and with the local government. Media system takes also an important role to evolve the player's business strategy. Through media (newspapers, TV, radio, Internet), a player can publish comments to promote their companies or to attack the competitors.

BTO is structured to be a real business-oriented web-based game with involving a building aspect that makes it also a construction and management simulations. As in most of those games, players start with an "easy-to-use" tutorial system, which guides them to the general features and game-play mechanics the players will need to become familiar with. In the meantime, investors are also playing a big role during the game where they provide you a series of missions to walk you through step-by-step. Each mission accomplished is not just one step closer to establishing a business empire, but also a position where a player gets some good treats, such as money and gold, which plays a major part in the game.

Overall, the game does not require economic or business background knowledge, but is very well welcomed. It is easy to play where lots of "real-life" plot twists and interesting spins on traditional business simulators are presented.

Graphically, the game seems to do a good work in comparison to other web-based strategy games or simulations. Yet, the menu system has a little to many features which can make players confused at the very beginning, and the "web-design" gives the impression of "online poker portal". In order to really enjoy the game, some studying, spending money and learning "how to be patient" and "forgiving" will be required. But as a feedback, BTO gives to the player a variety of directions how to obtain some good strategy skills and management-decision processes that can be mirrored to the "real-life" world.

Figure 3. Business Tycoon OnLine (Screenshot of BTO users interface)

3.1.4. INNOV8 2.0

The INNOV8 is a serious game which was developed by IBM as part of their Academic Initiative programme. It is based as a role-playing game that simulates business process management in a 3D environment. The IBM SOA (self-oriented architecture) team originally created the game to help educate potential SOA clients. The initial version was only open to the academic community and has been in use at over a 1,000 universities and colleges (as far and wide as Beijing and Manchester) since its launch in 2007 [39]. The 2.0 version was released on May 2009 and has two extra scenarios – smarter supply chain and smarter traffic – in addition to the original customer service track. The original scenario of the game deals with a call centre where the players are using the call centre environment to develop more efficient ways to respond to customers. In each of these three scenarios, a player's goal is to model a new business process in order to come up with solutions that improve the efficiency. Online version of the game is also available and is open to the public.

The game employs a first-person role-playing approach where the player assumes the role of a consultant within a company that is experiencing challenges. The player is given a goal which he/she must achieve in order to successfully complete the game. The goal is to re-engineer a call centre process for the company in order to make it more efficient and effective. In order to achieve this goal, the player has to complete certain tasks which evolve as the game

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progresses. The game starts on the very first moment when a player takes the role of a female virtual character that has been hired by After Incorporate Company. A players' mission is to invest a critical process from the inside of organisation that deals with the customer service. The goal is clear: improve customer service and maximise profits while running a call centre. A player uses drag-and-drop graphics to advance through the game. Since main parts of the game are taking place in 3D environment, the game gives the very impressions of the "first-person-shooter"-like game play.

While different tasks are completed, the game tries to "force" the players to make decisions as they seek more efficient ways to manage a call centre and respond to customers. When the business meeting takes place, a player has to play with different variables of business modeling and see how player's changes vary the outcome, preparing them for the day they need to make real decisions.

This game focuses on the experience that is gathered by the individuals who are starting to learn about business project management and processing of the information and decisions. There are three levels to Innov8 2.0: process discovery and process modeling, collaboration-driven simulation and iterative process improvement, and real-time business management. INNOV8 2.0 gives players also the option to collaborate to map out business processes, identify process bottlenecks and explore what-if scenarios. Some parts of the game, which even has virtual characters in a shape of heroes and villains, use "Second Life-like" graphics.

Figure 4. IBM innov8 (a screenshot of 3D environment of Innov8 game)

Graphically, the game is very rich. In the beginning of every scenario, there is a short movie scene provided, where the objective goal is explained. It has virtual avatars (characters) that have audio voice, when a player has a meeting discussion. The interface consists of no menu bar tools. The GUI (Graphic User Interface) is manly concentrated on point-to-click and drag-and-drop issues, where a player sets the parameters to simulate the right solution for business process management problem that is being issued. The overall visualisation of a game gives the expression that the game origins from the commercial-designed game market.

Overall, INNOV8 is an interactive, 3D business simulator designed to teach the fundamentals of BPM. BPM enabled by SOA delivers continuously to provide lifecycle improvement, drives innovation in the business process and business model. Capabilities from both the software and the expertise follow a logical lifecycle approach for modeling, optimising, designing, deploying and managing business processes.

3.1.5. Wall Street Survivor

Wall Street Survivor (www.wallstreetsurvivor.com) is web-based financial (stock market) game with real market data, real stock symbols and real market tracking, all tracked and accounted for on an impressive simulated trading platform. It simulates real-time bid/ask trade fills, streaming profit and loss pages. The "virtual stock market" site offers a fantasy stock-trading platform, real-time quotes for the most realistic paper-trading experience, as well as educational articles and forums. In addition, to play the advanced version the subscription with payment is needed. Wall Street Survivor is considered as a "biggest simulated trading game on the internet with thousands of people learning the ropes of trading every day". It was launched on September 2011, where it has currently come up to 350,000 registered users and 3.5 million page views per month (www.finovate.com). Players can interact in the platform to share trading tips and make new connections as they learn how to trade and gain confidence in their decisions.

In order to play a game, the profile account needs to be created and registered. Once a user is registered at Wall Street Survivor, he/she receives an account with $100,000.00 in simulated money to trade with. The account also includes a margin, meaning that a player can use up to 2 times the amount of money in the account for trading, in other words $200,000.00. As a safeguard to help a user to learn, Wall Street Survivor do not allow more than 25% of users balance to be traded in any one position at a time. Players (investors and traders) can also win prizes if they land on the top gainers category. The game also has a resource section on their website which is full of articles explaining the most important trading topics, including stocks, options, futures and other important trading ideas. Wall Street Survivor also gives out $100,000 in prizes every year to its players, which is a very nice thing for them to do. It is easy to navigate around the website, which makes Wall Street Survivor different from other stock market simulation.

Getting help at Wall Street Survivor is easy as click and send. The FAQ page is well supplied with helpful data while a user is logged in to this simulated stock market game. One of the most important lessons that one can learn in Wall Street Survivor is that he/she cannot play unless he/she meets the understanding of dynamics of the stock market. Wall Street Survivor

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articles, which are regularly uploaded on official page, do not guarantee you to higher gains, but it rather guides you to important skills such as choosing the best deals, comprehensive usage of best strategies, and finding hints which are hot or preferred stocks to be bought (www.wallstreetsurvivor.com).

However, in placing a trade at Wall Street Survivor, the quotes shown for a particular stock are delayed 15–20 minutes. This delay matters so much in real trading; but for the sake of learning day-trading strategies, this delay might be justified in order to make the most out of Wall Street Survivor by using different strategies or position sizing methods. This enables as well as to learn how to close out positions. At the end of each day, Wall Street Survivor would make users to realise that practice can move him/her further in the ladder of success. Perhaps being conscious that no money, and therefore no emotions, is involved, this certainly allows users to practice the game without any bad consequences (www.wallstreetsurvivor.com).Graphically, the game is strictly text-based with a view of different types of charts with various technical indicators. Wall Street Survivor is not for every user. For users that have no desire to learn about the stock market or get involved in to the real stock market world, it is highly not recommended, yet for people who want to "hone" their trading skills and simulate real trading before doing real business with real money, Wall Street Survivor is a good place to start.

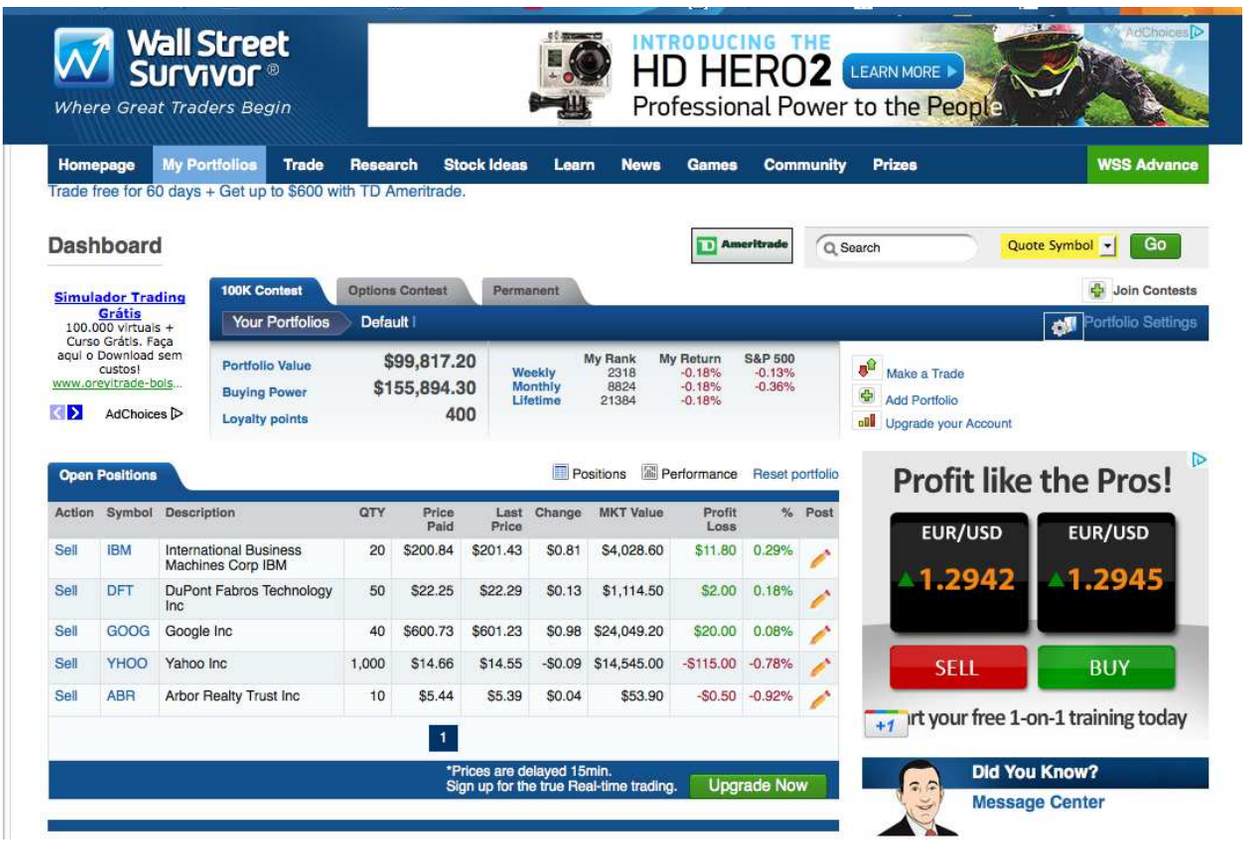

Figure 5. Wall Street Survivor (Screenshot of online Wall Street Survivor virtual stock)

3.1.6. Big Oil: Build an Oil Empire

Big Oil: Build an Oil Empire is a business strategy game where users take a role of oil baron who is set in times of the oil industry pioneers, in order to build his own oil empire by taking control of the entire oil business process, from surveying, drilling and extracting to refining, selling and market investments. The game was released in July 2006 and developed by Try Synergy. The game can be played in a single-player mode or multi-player mode online or via a local network with up to six players [39].

Big Oil lets users to build an oil empire by drilling for oil, shipping it to refineries around the world, and eventually processing it into products that can be sold to the public. To play a game, user/player can choose from more than 15 scenarios based on historical events such as the Oil Crisis, Lenin's death, Apartheid, World Wars or the Great Depression [39]. Each scenario has unique rules and conditions for success. However, they can all be played about the same, which is to say, they all play poorly. A player can also choose a free play campaign, where he/she starts from scratch and builds oil wells and refineries, researches new technology to improve transportation and creates new products and develops cities that provide more workers. There are two difficulty modes to choose from: easy mode and advanced mode. When choosing the easy mode, the player is receiving a constant help from a virtual assistant that guides the player through so-called "getting familiar" process with the users interface and makes recommendations to user's decisions in order to automatically undertake certain menial tasks, like sending a virtual team to test a potential oil field, with user's permission. Big Oil is a commercial-strategy-game alike. With all the functionality that is provided, Big Oil gives more or less the expression of Dune 2000 (http://www.gamespot.com/dune-2000/) or series of war craft games (http://eu.battle.net/wow/en/) where the competition of your opponents is running all the time. The player's progress is showed by the money budget he/she receives in order to how his/her oil business is growing.

Big Oil starts out at the top of its difficulty curve, forcing potential players to spend a couple of hours learning the "ins" and "outs" of the game's extremely confusing user interface. This sort of complexity tends towards the "status quo" for simulations, but even for simulations like the one in Big Oil, it is hard to get the hang of.

Like any open-ended game, there are a large multitude of choices to be made that allow for a different game play experience each time. However, the high initial difficulty curve of the game, as well as the underwhelming experience of playing it after getting a handle on it, Big Oil game will probably spend more time in the desk drawer gathering dust than in CD drive. Big Oil starts with a generally unappealing premise and goes downhill from there. The game is difficult regarding the controls as they are somehow hectic and boring. At the same time, they are packaged in an uninspiring shell of semi-poor graphics.

Overall, the game itself is merely oriented to the oil business, which means if users are not so passionate about the world of oil business, they can easily be confronted with the hectic learning curve and subsequent extreme dullness that Big Oil offers; however, on the contrary for "oil-tycoon-wannabes", there is true possibility that they might find the game to be endlessly fascinating.

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Figure 6. Big Oil: Build Oil Empire (Screenshot of GUI of Big Oil: Build Oil Empire).

3.1.7. Virtual Leader

Important area in the management education is the building of leadership. The training in that context is possible with the Virtual Leader game. The game is dedicated to acquiring leadership skills. Being a good leader is considered as a capacity to have suitable power in influencing the employers for making an effective and productive atmosphere that will enable successful accomplishment of the task and the project at the end. This can be achieved by many components in a form of communication and increasing awareness of verbal and non-verbal communication cues. Virtual leader as a simulator provides a user step-by-step practices, by preset communication dialogs over the course of several sessions or one long session with virtual co-workers. It uses a meeting environment to allow the users to interact with other characters. There is also a well-written guide that describes the theories behind the content.

Virtual Leader is a standalone game, which means when the game is installed to a computer it can be played. Once the game starts, users need to register and create his/her account and begin to play. In the beginning, the player can take short introductions about Leadership

fundamentals and framework showing how communication affects the principles of leaderships. As well as the player can choose two other options which are either to begin the learning of the principles through tutorial practices or to be engaged into the simulator through variety of leaderships scenarios. Player takes the role of the character named Corey that Nordic enterprise hired to work as a sector leader at the customer service call center. It is all about getting work done. Virtual Leader uses meeting scenarios where Corey is getting to interact to virtual characters to get the right combination of ideas completed. At each meeting sessions, the goal is to introduce ideas, support them and make them happen after finishing the meeting. By achieving the goal, a user must create the right amount of tension and using the right amount of gained power to make the virtual character accept and support the leader's ideas. All this components of maintaining the power are constantly monitored in a shape of 3-color graph that can be seen as a practice mode. When the meeting is finished, learner is given a summary of how he/she used the key tenets of leadership skills to manage the expectations of the meeting. A set of graphs and numbers are presented where players can analyse how to improve the strategy of increasing or decreasing the elements of a good leadership.

Virtual Leader does not try to simulate a real-life conversation. The learning objective mainly focuses to make the learning experience to develop intuitive skills so that people can understand the people's intent in a real-life situation without hesitation.

Figure 7. Virtual Leader (a screenshot of business meeting at Virtual Leader Simulation)

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3.1.8. Shark World – A Project Management Game

This game is considered as an excellent addition to the basic project management training. The main focus is in experimentation and gaining experience about key aspects of efficient project management in a highly entertaining and motivating setting. The game is played online, enabling a creation of convincing virtual environment, close to the reality in which a particular project is developed in real time. The game proceeds in an interactive way that urges the students to react when things go wrong or more preferably before they happen. The game can be played both through online and mobile channels which make the game accessible any time and in any location. Projects are developed in (accelerated) real-time (24/7) so players have to keep up with the fast pace and to act or intervene almost immediately. The game is propelled by an underlying suspense story that blurs the line between the reality and the fiction. The game offers life-like content as a test case for inspiring the trained future project managers. The screenshot of Sharkworld's GUI is presented in Figure 8.

Shark World combines simulation elements with a story and characters, to create an engaging project management experience. With the help of picture and video material, players are taken on a trip to China. Once they arrive in China, players start to manage their project. They can use conversation, chat and email, in order to take care of the interests of the boss, client and team. They also make project schedules and project budgets. The choices that players make during the game decide whether the project becomes a success or turns into a disaster (www.ranj.com).

The game play is based on the usage of various media such as emails from game characters, newspaper and TV news in order to give extra depth to the experience. When players are not behind the computer, they get text and voice messages from game characters on their mobile phones.

Once the user is registered (create our profile and enter the mobile number), the game is ready to be played. The game begins with an automated mobile call, where the virtual female assistant lets the player know that she is waiting to pick up the player on the Shanghai airport. After the game started, the introduction video begins, where the female assistant meets the player at the meeting spot (Shanghai airport) and explains the background story and the aim of the project to be processed. She describes the challenges the player should expect during the play. On a location near the city of Sha Cheng, a large-scale shark aquarium is being re-built and is combined with a swimming paradise named "Sharkworld". The Virtual Dutch (international) installation company with the name "Spector Install" has acquired the project. The company is experienced for building swimming pools, congress halls, hospitals and dolphin aquariums, but has never worked with sharks before. Their corporate website provides a nice overview of several installation and construction projects in both utility and industrial fields, with diversity of cases, but without any shark aquarium.

The game continues with the news that the appointed project manager on site has mysteriously disappeared and the player is a person that applies for his job, gets the job and is sent to China immediately. The player lands in the middle of an ongoing project and must bring the project to a good end. What the player does not know at the start of the game is that not everything

in the game is what it seems to be. Some things, e.g. obstacles, will turn out to be setups as they are designed to test the player's project management abilities (www.sharkworldgame.com). During the game, a player is expected to achieve and display essential soft skills, by making conversations with people who are involved in the project. When a player has a dialog with the game characters, the "mood icon" of the characters appears on the upper right corner of GUI (graphical user interface presented on Figure 4). When the game character is satisfied with the player's answer, the "mood icon" shows a "happy face"; and on the contrary, when the game character does not like the answer or the undertaken step, the "mood icon" changes into an "angry face". During the game, a player must maintain the three very important type of atmosphere:

- Team satisfaction
- Boss satisfaction
- Client satisfaction

Figure 8. Shark World (a screenshot of Graphic User's Interface).

The levels of these attributes are shown on the status bar, with a little pointer that shows where on the scale of satisfactory presented skills the player is. For example, if the pointer is colored

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green, the satisfaction is high and the red color indicates low satisfaction. In order to bring the project to a successful end, all three satisfaction types have to get the highest satisfaction levels, meaning that the pointer has to be in the area of a green color on a the scale bar. The performance of solving problems is also followed during the game. Whenever in a game a challenge comes up, the player must perform a task in order to solve the problem presented as a challenge. The player provides solution to the problem with calculation of the data information gathered during the game for an assessment of risk management. Depending on a player's decisions, the result of the challenges is shown in the project overviews. After the accomplishment of the task, the game displays the achieved performances in problem-solving being categorized as extremely poor or professionally successful.

4. Assessment and evaluation

The brief presentation of the selected games makes possible the assessment of the game properties to be presented in the form of table in the section that follows.

4.1. Value of the assessment parameters

Below we present the value of assessment parameters presented in Section 4 for each of the selected games.

	eRepublik	Virtonimics	Shark World	IBM innov8	Virtual Leader	Big Oil	Wall Street	The Beer Game	Business Tycoon Online
Web-based/ Desktop	Web-based	Web-based	Web-based	Desktop	Desktop	Desktop	Web-based	Web-based	Web-based
Distribution	Republik Labs	Virtonomics team		IBM	SimuLearn	Try Sinergy	Wall Street Survivor	MTI Sloan	Dovogame
No. of users	**400.000	**550.000	n/a	n/a	n/a	n/a	350.000	n/a	**600.000
Year of publishing	2008	2009	2008	2009	2003	2006	n/a	n/a	2010
Dimension	2D	2D	2D	3D	2D	3D	2D	2D	2D
Platform	Any	Any	Any	PC-Windows	PC-windows	PC-Windows	Any	Any	Any
Free of use	Yes	Yes	Purchase required	Registration approved	Purchase required	Purchase required	Yes	Yes	Yes
Time period	Min. 1 month	Min. 1.5 month	Min. 1 month	2–4 hours	6–9 hours	8–10 hours	Min. 1 month	1–1.5 hours	Min. 1 month
Industry or	Generic	Generic	Industrial	Industrial	Industrial	Industrial	Generic	Industrial	Industrial

	eRepublik	Virtonimics	Shark World	IBM innov8	Virtual Leader	Big Oil	Wall Street	The Beer Game	Business Tycoon Online
generic									
Degree of complexity	Low	Medium	Medium	Low	Medium	Low	Low	Low	Medium
Functional or enterprise	Enterprise	Total enterprise	Total enterprise	Enterprise	Enterprise	Functional	Functional	Functional	Total enterprise
Competitive or non-competitive	Competitive	Competitive	Non-competitive	Non-competitive	Non-competitive	Competitive	Competitive	Competitive	Competitive
Feedback system	Experience points	Virtual Money income	Customer influence	Points received	Statistic charts	Points received	Virtual money	Statistic charts	Points received
Deterministic or stochastic	Deterministic	Deterministic	Deterministic	Deterministic	Deterministic	Deterministic	Stochastic	Deterministic	Stochastic
Briefing systems	Tutorial video of personal mentor	Poorly supports with mail from virtual administrator	Supported with mails from virtual administrator	The virtual Note support	Text Instructions and audio/video tutorial	Virtual assistant provided	Text tutorial	Text tutorial	Text tutorial
Learning objectives	Strategy skills, politics-management skills	Strategy skills, politics-management skills	Project management skills, hard skills, soft skills	Business Process management skills	Leadership skills	Business strategy skills	Financial skills, stockbroker skills	Coordination, logistic skills	Strategy business – decision-making skills
Background knowledge	Not required	Required	Required	Required	Not required	Not required	Required	Not required	Not required
Interactivity type	Yes	Yes	Yes	No	No	No	No	No	No

Table 1. (Assessment parameters and results) Immersive business simulation games: an innovative pedagogical approach to e-learning

5. Discussion

The assessment of selected business simulation games has provided some summarised results. The parameters that assess the properties for achievement of the educational goals are considered as most important. In that context, it is important for the game scenario to meet the

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educators' and the learners' expectations. Games that answer to this requirement usually have highly developed segments or levels of reality. In addition, the game has to lead the player through several situations that require decision-making. The game should help the learner with proper guidance and explanation in case the decision was not selected as it was expected. This type of game enables faster transfer of experiences, getting skills more easily and good outcomes when the achievement of learning objectives is analysed. By inspection of Table 1, it can be concluded that Shark World game appears to represent the real-case situation most effectively. The game provides excellent underlying storyline (which turn is also entertaining), the fictional characters are played by the real actors and the video material is a very nice attempt that makes the players to feel like being part of a real business project in a real-life environment. The game eRepublik provides scenarios in a fictional war situation where users are gaining their economical power; however, this is most likely hard to happen in the real world.

The way of presenting the game content, the game scenarios and the users' satisfaction are also important aspects how the game is structured. Another good example among the selected games is certainly the IBM's INNOV8. This game is based on high rich graphics, cut scenes, scenarios and attractive walkthrough. It gives a good opportunity to explore how to learn the basic about the management of business process and how to collaborate with participants of the business processes, how to identify process bottlenecks and how to explore what-if scenarios when a decision is expected to be taken by the player. The game provides clear and easy-to-learn player's interface which enables an easy control of the game. On the contrary, Virtual Leader, give an impression of poor level regarding the properties required in the player training and learning. The gameplay focuses on a selection of the right set of dialogs with virtual characters. Functionally, there is nothing much to do within the presented scenario. With no sufficiently presented scenario, players are more likely to be confronted with a hectic learning curve and subsequent extreme dullness. However, it should be noticed that the game gives an excellent case for imitation of human behavior and for practicing tenets of three-to-one leadership with simulations of business meeting sessions which can be mirrored into the real-life situations.

The technical properties studied in the games, e.g. GUI (graphical user interface), the screen briefings, the tutorial supports also differ from game to game. IBM's INNOV8 and Shark World are good examples as they contain clear and easy-to-learn player's interface, while Big Oil game (Build an Oil Empire) requires from the player to spend a lot of time for learning the usage of of the game GUI.

On the other hand, the MMOG business games (Virtonomics, eRepublik, Business On-Line Tycoon, eRepublik) have shown to be bad examples regarding the user's guidance. Players need to learn the whole functionality of the games "menu-bar" and game GUIs tool bars, without any comprehensive tutorial support in the background. These games are time-consuming and are a temptation for the players' motivation and satisfaction. We may consider them as helpful in some cases as they demonstrate some aspects of business strategy, decision-making processes, business management and organisation activities.

6. Concluding remarks

The research on modern students' education methods and techniques has proven that education based on practical usage of knowledge and training in a target activity environment is the most effective way of learning and educating [41]. Business simulation games are developed to implement different real scenarios and virtual worlds enabling the player motivation to be upgraded and the learning goals achieved. They specially try to make a good attempt in capturing and combining the virtual reality technologies and engaging components of video games for simulation of the real eco-systems. The current study is a contribution to the assessment of the business simulation games to be perceived as an interesting and desired form of gaining experience to be used in later professional practice [42].

However, business simulation games can be allocated to different game types or categories, based on the variety of "learning" content and their technical capabilities. In that context is extracting the in-built learning activities which were proved to be the most important in the game assessment within the educational and training environment. The presented study is a contribution to this area of research. The selected business simulation games from the current stage of "world of business games" and their study are not attempts to cover the whole knowledge area that can be met in business education [39], but complement the current research in this field which is considered to cover some of the most important methods of acquiring technical and problem-related knowledge. When a combination of business simulation games is adequately set up within particular educational process, this becomes a practical teaching-related arrangement that successfully combines the natural predisposition of the players with planned and directed knowledge acquirement. With most of the other teaching methods, this is rarely the case.

This contribution has pointed out to the fact that different games provide different skills and practice and that is one of the reason why the selection of most appropriate game should be based on criteria and property evaluation. By deciding/selecting which "field" of business education needs to be "trained", suitable set of games can be found as the market of business games is sufficiently large and rich. However, the market changes with time to time and business simulation games are offered with variety of expectations, limitations (games can be out of date, they can be commercial, they work just on certain platforms) and (dis)advantages that should be carefully considered.

With all positive effects found in the training with business simulation games, it is necessary to point out that digital learning games, on the other hand, can also have some negative aspects. Games and gaming behaviors can in many ways be fundamentally incompatible with the institutional education environment. As Caillois [43] outlines, this can be formulated by consideration of the six formal qualities of games regarding the incompatibleness with the institutional environment:

- Freedom
- Separation (from events outside of the game world and the structure of the game)
- Uncertainty of outcome
- Non-productiveness

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- Government by rules
- Make-believe (not real)

Freedom of action means that the games are time-consuming and diffuse, tending to frustrate attempts to focus efforts on a single, measurable curricular element. Separation of the gaming world from the outside world may make it difficult to connect gaming outcomes to established learning standards, and the uncertainty of outcome can make it difficult to measure formal learning in any case.

Game designers in that case need to re-assess the business games in order for the business models to be re-built for more realistic simulation of the market situations. Moreover, a properly designed game should allow one to generate results that would show its participants the increase in the knowledge gained during the game in the normal course of game usage (during the game).

We may conclude as well as that the business simulation games make great attempts to seize technologies for presenting the virtual reality and the entertaining components from digital games world. By capturing the massive size of resources and technology from the video games industry, business games can bring learners in to new environment where business (management) processes can play a major role in everyday life.

These are the processes that are identified as critical to different type of organizations (energy sector, banking, health care, supply chain, logistic infrastructures, traffic systems, customer service, telecom service, politics, etc.), This chapter does not bring solutions for "how to select" a business simulation game for particular educational case. It does not provide also advices to which level business games should be used in the game-based learning environments, but it provides ideas about the appropriateness of several indicative games and how to assess some aspects of their educational capabilities in achieving learning goals. This chapter contributes also to the widening of the educator's horizons and opens a window towards the "massive world" of continuously rising the world of business simulation games. The chapter has shown as well that the "great teachers-designers" need to step forward together with people with visions in the area of e-learning for better harnessing of the wide range of business simulation game world.

Another concluding remark goes to the request of simulation games to be used as didactic tools within the new learning methods, that is, they must be extremely precise in the simulation of the business market realities. Game developers should monitor continuously everyday business ecosystem, so they can adequately present the predicted market situations that make the virtual world as close as possible to the real world.

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