

The Role of Simulation Games in Economics Education: An Active Learning Perspective*

Michał SOSNOWSKI

Wrocław University of Economics and Business, Wrocław, Poland

Correspondence should be addressed to: Michał SOSNOWSKI, michal.sosnowski@ue.wroc.pl

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Abstract

Contemporary higher education faces increasing pressure to equip economics and management graduates with practical, decision-making competencies transferable to professional environments undergoing rapid transformation associated with Industry 4.0. At the same time, the cognitive and motivational profiles of Generation Z students – shaped by immersive digital environments – call for teaching methods that go beyond traditional lecture-based knowledge transfer. Despite a growing body of international research on game-based learning, a theoretically grounded and empirically informed analysis of business simulation games as a tool for academic economics education remains underdeveloped in the literature, particularly regarding soft-skill validation, long-term learning outcomes, and comparative effectiveness across simulation types. This article addresses that gap. The study is review-analytical in nature and combines two research approaches: a narrative literature review of active learning theories and empirical studies on simulation effectiveness, and an analytical case study of the Marketplace® "Business Fundamentals" game, based on published methodological materials rather than primary data collection. The analysis reveals that business simulation games are solidly grounded in experiential learning theory (Kolb), constructivism (Piaget, Vygotsky), self-determination theory (Deci & Ryan), and the concept of flow (Csikszentmihályi). Meta-analytic evidence confirms moderate but consistent positive effects on declarative and procedural knowledge acquisition, student engagement, and systems thinking. Nevertheless, the educational effectiveness of simulation games is strongly moderated by the quality of instructor facilitation, the structure of debriefing sessions, and the degree of integration with the broader course curriculum. The article concludes with five evidence-based recommendations for academic practitioners and outlines priority directions for future longitudinal and comparative empirical research in this field.

Keywords: simulation games, economics education, active learning, experiential learning, game-based learning.

Introduction

Contemporary higher education faces growing pressure to provide graduates of economics and management programs with not only theoretical knowledge but, above all, practical competencies that can be directly transferred to the professional environment. This pressure stems from at least two sources: structural changes in the labour market associated with the fourth industrial revolution (Industry 4.0) and the changing cognitive and motivational profiles of students, referred to as Generation Z, shaped by the immersive digital environment (Prensky, 2001; Oblinger & Oblinger, 2005). In the context of Industry 4.0, characterized by the digital transformation of economic processes, traditional methods of knowledge transfer are proving insufficient in developing future-proof competencies, such as data management, critical thinking in a digital environment, and the ability to quickly adapt to technological changes. Simulation games, as tools that connect virtual environments with real-world decision-making processes, address these challenges, enabling students to safely experiment in conditions that simulate the dynamics of modern digital markets. Contemporary business simulations increasingly

utilize advanced technologies such as artificial intelligence (AI) to personalize learning scenarios and augmented reality (AR/VR) to enhance learning immersion (Long et al., 2024).

The traditional lecture model, based on unilateral knowledge transfer, is sometimes questioned in this context as insufficient – not so much due to the substantive value of the content imparted, but rather to its limited ability to develop competencies requiring active action, decision-making under conditions of uncertainty, and teamwork. Consequently, creative thinking, the ability to respond quickly to changes in a volatile environment and to solve specific problems, efficiency, interdisciplinarity, and continuous learning and skill improvement are becoming increasingly important.

Today's youth are increasingly exposed to the world of economics, earning money, managing their own funds, helping in family businesses, and participating as members of households in decisions where typical life situations are, for obvious reasons, economic choices. This highlights the need for economic socialization of young people early in their education at school and later in university, where, especially in economics fields, opportunities to acquire such knowledge and skills in the field of economics are significantly increasing. Knowledge, by creating human capital, is now becoming a key economic resource – a source of economic competitiveness, especially in a knowledge-based economy, which consequently contributes to the growth of a given society's prosperity.

In the age of ubiquitous computers, smartphones, and the internet, it is natural to leverage these technological advancements in the teaching and learning process to make it more effective and efficient. Providing information and knowledge, equipping young people with useful skills and shaping appropriate attitudes, and, importantly, acquiring the necessary competencies that address the contemporary challenges of the world, is an urgent task for educational institutions, including universities. One response to this diagnosis is the introduction of business simulation games into the academic teaching process. These tools – present in management education since the 1950s (Faria et al., 2009) – are currently experiencing a significant renaissance, aided by technological advances and the growing availability of online platforms. Their fundamental teaching value lies in creating a controlled environment in which students can make economic decisions, observe their effects, and draw conclusions without suffering real financial or organisational consequences.

The use of information technology in teaching is essential, as the virtual world, the world of games and fun, is so natural to young people that, when confronted with traditional forms of education, this "traditional" approach would be at a disadvantage due to its lack of strong stimuli, or even boredom. This would imply a discouragement from exploring often difficult economic problems, which, if approached too superficially, would shape a false picture of reality. This, in turn, would result in drawing incorrect conclusions or making overly simplified assumptions. Undoubtedly, education disconnected from reality, knowledge unconnected with practice, deprives students of the pleasure of learning and discovering new things. Without the right skills, knowledge, and competencies, it will be difficult to succeed in adulthood.

Indeed, knowledge is now readily available, and many concepts don't need to be memorised to be quickly learned via the internet, which provides a nearly limitless resource for all knowledge. However, this temptation to not learn can lead to a lack of mastery of the basic laws and relationships that govern the world, which in turn makes it difficult to analyse and discover cause-and-effect relationships in the simplest of matters.

Education systems still place so little importance on shaping the economic awareness of society, particularly in the area of personal finances, that the main losers are ordinary people who fail to manage their financial resources and end up in excessive debt. Recognising and solving a specific problem requires a person or group of people to possess the appropriate knowledge and skills. Students can acquire this knowledge through university (or school) education. This education should be conducted in such a way that it enables independent solving of problems they will encounter in the real world. A sine qua non in this respect is that the teacher possesses appropriate methodological competencies, including knowledge of appropriate modern teaching methods and tools and the ability to use them efficiently. Therefore, to avoid losing the path to reaching a new generation, it is necessary to utilise teaching methods that are closer, more familiar, and recognisable to young people. Such methods certainly include simulation games, including games related to economics.

This article has three main goals. First, to identify and discuss the theoretical pedagogical foundations justifying the use of simulation games in higher education. Second, to review and evaluate the available empirical research results regarding the learning outcomes achieved using this method. Third, we will identify the limitations and potential risks associated with its application in academic practice. The Marketplace game "Business Fundamentals" serves as an illustrative case study. It is a multi-disciplinary business simulation that incorporates a range of management functions and allows students to manage a virtual enterprise in a competitive market

environment. This study is of a review-analytical nature and combines two research approaches: a narrative literature review and a case study of a selected teaching tool.

The essence of economic education

According to the Illustrated Universal Encyclopedia, education is an activity aimed at introducing people to a worthwhile life through education and upbringing consistent with the patterns and goals prevailing in each society (Marcinek, Borowiec, 2008). It is also the sum of processes and influences aimed at changing people, primarily children and youth, in accordance with the ideals and educational goals prevailing in each society (Okoń, 2001). According to Z. Kwieciński, education "is the sum of influences on individuals and human groups that promote their development so that they become conscious and creative members of the social, cultural, and national community to the highest degree, and are capable of active self-fulfillment of their own identity and self by undertaking supra-personal tasks [...] it is leading other people to higher levels of development and their own activity in achieving their full and specific potential. It is the sum of activities and processes that promote development and the state of their effects, i.e., the achieved level of competence, identity, and subjectivity" (Kwieciński, 1991).

Education also refers to "the totality of educational procedures and corresponding cognitive activities aimed at achieving intentionally adopted developmental goals, formulated for individuals, social groups, and entire societies. Therefore, education is created by teaching and learning activities" (Malewski, 2010). According to D. Peterson (Peterson, 2013), education is a planned process containing four essential components:

- 1) appropriately selected and organised content that should be acquired promptly,
- 2) methods by which knowledge will be acquired,
- 3) the person who will conduct the classes in an organised manner,
- 4) the goals the student aims to achieve in educational activities.

People involved in education can determine their subjective, co-subjective, and subject-related functioning in the learning process. This means that a student/graduate can decide or plan something independently, while in other cases, co-deciding, being part of a plan, or being subject to someone else's decision. He may be the creator or co-creator of certain ideas, and at other times be dependent on the ideas of others.

Contemporary education places significant importance on young people's active participation in the pursuit of goals, making free choices, and enabling them to gain personal experience and take responsibility for themselves. This broadens the individual's subjective participation in their own development, which also determines their proper functioning in various life situations (Zarzecki, 2012). In the 21st century, increasing importance is being placed on fostering entrepreneurial and self-development attitudes among young people, so that they can more easily adapt to changes in a dynamic economic environment and more effectively manage their time, careers, and businesses. Simply put, they should be prepared for the various opportunities they may encounter in the real job market. Education that meets the challenges of today can minimise unnecessary disappointments and frustrations caused by a failure to adapt to the conditions prevailing in the immediate and distant surroundings of young people who are studying or teaching.

Entrepreneurship, understood not as running a business but as an attitude toward life, is essential for a free-market economy to develop and function properly. Since only 4% of people are born with entrepreneurial traits, the rest must learn methods and ways of coping in the free market. A state that wants to thrive is therefore responsible for organising an appropriate education system that shapes desirable behaviours and providing assistance to those who—through no fault of their own—remain on the margins (Malinowski, 2007). T. Tyszka defines entrepreneurship as the process of creating new value through the dedication of necessary time and effort and the acceptance of financial, psychological, and social risk, which results in financial profit and a sense of personal satisfaction and independence (Tyszka, 2004).

Of course, one might come to believe that the best way to learn entrepreneurship is to observe and imitate those who have achieved success in business, often including immediate family members who serve as first teachers in the difficult art of generating profits. One can also learn to make decisions solely through one's own or others' experience. It is always better to avoid mistakes as an individual, aware of one's actions, but knowing what is wrong and what is right is crucial. What is true for an individual doesn't necessarily have to be true for the whole (the *pars pro toto* fallacy).

Economic education in institutions such as schools and universities offers something more; it helps one look at economic categories in an aggregated manner, through the prism of the entire economy and processes occurring on a meso- and macro-scale. It also provides an opportunity to familiarise oneself with concepts that, in their everyday meaning, we use in everyday life. However, thanks to economic knowledge imparted professionally, we can understand the true meaning of these concepts, the relationships between individual economic quantities, and the cardinal principles and laws that govern the world of economics.

Between scientific thinking about economics and the knowledge of the average person making economic decisions, there remains a significant gap that can be called "folk economics." This set of common perceptions about how the realities of managing limited resources operate is an intuitive way of thinking, described as naive by P. Rubin, the author of a publication on this topic (Rubin, 2003). Folk economics does not result from studies, from accepting certain economic theories as valid and rejecting others. It does not involve conducting research and drawing conclusions from it. It is also not systematic and cannot answer all the questions posed by economic reality for the acting individual. Folk economics can therefore be compared to pre-scientific attempts to understand social reality itself, that is, to common knowledge encapsulated in adages and proverbs. It is a remnant of the times when market exchanges did not exist, as it is a relatively new and certainly counterintuitive way of increasing wealth. Due to folk economics, myths persist in society, such as the fear of investors from other countries and the aversion to the wealthy. Only scientific economics can reveal the flaws in thinking using folk economics models (Chmielowski, 2017).

Nowadays, economics is not a field of knowledge that is difficult to access, hermetic or intended only for an exceedingly small group of insiders. This ordinariness and ubiquity of economic phenomena of different significance and scale make everyone encounter economic problems in their daily life, not always realising what they are called professionally and what impact they have on their lives and decisions. The dissemination of economic education, making it attractive and "digestible" for the average recipient is to allow people to make these decisions consciously and optimally, so that in almost every activity they start noticing the "input-output" relationship and strive to rationally put this relationship at the best possible level. Thanks to this, economic knowledge is likely to gain utility value both for the young and the older generation who, especially in the free market realities, move less efficiently than the generation that grew up in the so-called command-and-control economy, where central government was to replace this free market. Without disseminating economic knowledge at various forums, through all available channels and to the possibly most numerous social groups, the achievements of scientific economics may be lost or lose their importance. Consequently, the only possibility left would be a return to short-term, micro-scale thinking, skipping the comprehensive or large-scale references and interrelations, which in a long-term perspective may imply a decrease in efficiency and in the level of social welfare.

The acquired economic knowledge, the acquisition of individual skills and competences should be treated as an investment in personal development, thanks to which we intend to get a better start in life, find a better job and receive a higher salary, and make a career both at home and abroad. Acquiring knowledge implies a cost of acquisition, but it is a cost of accrued profits. Simply and "economically" put, this investment is certainly a pro-development one and has a positive rate of return. The economic knowledge enables identification of opportunities and threats related to market functioning and, consequently, various levels of education in the field of economics, including financial education, should be introduced for various stakeholders at subsequent stages of society's development (e.g. secondary and higher education, financial institutions, public administration, etc.). It should be remembered that financial education, as a component of economic education, shapes economic awareness. The research on the level of economic knowledge among students conducted by J. Przybytnowski shows, however, that more than half of the students have significant shortcomings in this respect, and the percentage of responses assessing their knowledge as "very high" or "high" has decreased in favour of average grades. Moreover, he found that their subjective sense of being knowledgeable was higher in 2014 than in 2016. The respondents showed the lowest level of knowledge when it came to the functioning of the banking sector, the concept and essence of inflation, or social and corporate insurance, while they coped better with questions related to personal finance management and electronic money (Przybytnowski, 2017).

Undoubtedly, the economics-related issues should be presented in the perspective of their direct relationship with the daily life of an average person and their impact on such life, so that these specific examples, instead of abstract considerations, could become the basis of economic knowledge presented in a form that would be interesting and thus easier to embed in the social consciousness.

Theoretical foundations of active teaching methods – justification for the use of simulation games

Business simulation games constitute a learning environment that fits exceptionally well into the logic of Kolb's cycle, the most widely cited theoretical framework and concept of experiential learning by D. Kolb (Kolb, 1984) in the context of simulation games. Kolb describes the learning process as cyclical, encompassing four stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. According to this concept, lasting and useful learning occurs not through passive reception of information but through full progression through the successive phases of the cycle.

Participation in the simulation provides concrete experience through decision-making in a context close to real life. The results of subsequent rounds – available in the form of financial reports, market indicators, and product evaluations – provide an opportunity to reflect on the consequences of the decisions made. Debriefing sessions led by the lecturer enable a transition to the phase of abstract conceptualisation, that is, linking observed phenomena to economic concepts and theories. Finally, the next round of gameplay creates conditions for active experimentation – testing modified strategies. As Keys and Wolfe (Keys & Wolfe 1990) aptly note, business games are "probably the closest available approximation of Kolb's cycle in a classroom setting." The reality around us requires continuous (lifelong) learning, acquiring new knowledge, competencies, and skills, necessary both at various levels of education and in the workplace and at home. The variability of the environment, economic fluctuations, changing fashions and tastes, political, systemic, cultural and, above all, technological changes constitute the basic determinant and at the same time stimulant of human activity, which without an effective educational process would be limited and costly due to barriers in adapting to the new reality.

The constructivist tradition, stemming from the work of J. Piaget and L. Vygotsky, provides further theoretical justification. Piaget (Piaget, 1950) describes learning as an active process of constructing knowledge through interaction with the environment, rather than as the passive reception of pre-made structures. Vygotsky (Vygotsky, 1978), in turn, emphasised the role of social interactions and introduced the concept of the zone of proximal development—an area in which a learner can perform tasks beyond their individual capabilities with the support of a more competent partner or group.

Simulation games engage both of these mechanisms. On the one hand, they force the learner to actively construct knowledge – no two rounds are identical, and every decision has consequences requiring interpretation and reflection. On the other hand, the game usually takes place in teams, creating a natural social learning environment: students negotiate interpretations of market data, jointly formulate strategies, and mutually justify their arguments (Bruner, 1974). In the Marketplace game "Business Fundamentals," this is particularly visible: each team member has a specific management role (president, vice president of marketing, production, finance, etc.), which forces coordination and joint interdisciplinary decision-making (Innovative Learning Solutions, 2022).

In addition, simulation games (e.g. Marketplace) have been gaining more and more popularity, as they offer students an opportunity to make certain simulated economic decisions and teach them (also by trial and error) how to optimise these decisions, without actually facing their negative consequences. The aim of a simulation game is precisely to avoid the potential losses that could occur in it (Knežević, 2008). The use of simulation games perfectly follows the Enlightenment principle of "learn and play, play and learn", because the game is also a play despite its theoretical basis, where players – in an absolutely reliable manner and in accordance with the knowledge acquired at earlier stages of education – consciously try to win, i.e. to obtain the best financial results with their enterprise run in a virtual market. The use of simulation games in the educational process allows the students to understand first-hand the processes of real life (Kutergina, 2017).

By imitating economic reality, players acquire experience that can be useful in real business. They start at the same level, and their correct, strategic thinking is decisive for gaining an advantage over competitors. The consequence of good decisions is winning, of the bad ones - a negative evaluation, which distinguishes this game from the real world, where measurable financial losses result from any mistakes made. A student almost immediately receives feedback as to whether their decisions were correct, whether their way of thinking was correct, or on the contrary. For this reason, games engage students a lot and develop the skills needed to solve problems by putting a player into the so-called flow – as M. Csíkszentmihályi (Csíkszentmihályi, 1990). This state is a subjective experience of complete immersion in the activity being performed, occurring when the task's difficulty is optimally matched to the participant's competence level. This state promotes deep information processing and lasting memory. Well-designed simulation games strive to evoke this state by progressively increasing the complexity of challenges as the game progresses. This logic is clearly evident in the "Business

Fundamentals" Marketplace simulation: in the first quarter, students make relatively simple decisions (selecting target segments, preliminary product design), while in subsequent rounds, the scope of decision-making expands to include production management, human resources, financial planning, and research and development activities (Innovative Learning Solutions, 2022). This allows for sustained engagement as participants' knowledge grows. Moreover, such games promote active learning based on feedback, usually in groups. They demonstrate features of intrinsic motivation directed at the learning perspective (Ertz, 2016). An action-reaction game quickly teaches and rewards correct behaviours, while incorrect actions cause worse results. New challenges, overcoming difficulties, competition, finding answers and looking for non-standard solutions, unexpected plot twists, the element of risk, and the desire to discover the "secret algorithm" around which a given game was created are factors that stimulate, inspire, activate and delight, at the same time offering an attractive way to consolidate the economic knowledge and the relationships governing the world of economics.

It is worth recalling the Self-Determination Theory (SDT) by Deci and Ryan (Deci & Ryan, 2000), who argued that human motivation is more enduring and effective the more fully satisfied the three basic psychological needs are: autonomy, competence, and relatedness. Game-based learning naturally addresses each of these needs. Autonomy is realised through freedom to make strategic and tactical decisions. A sense of competence is built through a feedback system available after each round. The need for relatedness is satisfied through teamwork and competition with other groups. Garris, Ahlers, and Driskell (Garris et al., 2002) proposed a model describing the motivational mechanism of educational games as a loop: game features (fantasy, rules, control, conflict, competition) → player engagement → evaluation and feedback → re-engagement. In this approach, a game is effective educationally not because it is "fun", but because its mechanisms structurally sustain the learner's engagement over a longer period of time - which is particularly valuable in the case of complex economic content, which in a traditional lecture approach may be perceived as abstract and difficult to access.

If the aim of teaching programmes addressed to students is to stimulate entrepreneurial behaviours in them, including the formation of start-ups, then a course covering the issues related to starting a new business should be considered the core one in the field of entrepreneurship for university students (Cieřlik, 2007), and the use of modern technologies may prove helpful here.

Thanks to this course (covering e.g. business plan or business games), the student acquires the ability to design the research independently or in a team, then conduct it with the use of basic statistical and forecasting tools, draw up a report and construct an elementary business plan. Utilising databases and information technologies, he can conduct basic market surveys, marketing research, opinion polls, analyses of the financial market and the current market situation, and he can also analyse and evaluate the processes taking place within a company as well as its general condition, at the same time using the tools designed to minimise transaction risk. In this aspect, it is not without significance during such classes to make young people aware of the need to take responsibility for decisions made and activities performed. The practical classes method consists of constantly linking theory with solving practical tasks, with these tasks characterised by an increasing degree of complexity and difficulty, from the least complex (elementary) to the most multidimensional and complex ones.

In the context of education, one cannot disregard the rapid technological changes, which in many cases take place in an almost revolutionary way. New devices filled with the once-unavailable technological solutions offer an enormous potential to support the teaching process, making it more interesting, better, in short – more modern. The concept of modern education, including economic education, is also associated with the use of modern technologies, which allow for making the teaching process more attractive, instead of using the proverbial "yellowed pages". Multimedia boards and projectors, computer labs, smartphone applications, fast broadband Internet, all this makes a useful tool for the teaching staff, without which modern schools and universities are simply archaic and therefore it is difficult to imagine a school today without these attributes of modernity. Of course, it should be borne in mind that such equipment of institutions does not determine the quality of the teaching process, because it only provides significant support for the work environment, and it will always be up to the teachers how they use these instruments and how they will contribute to students' development and activation. Webinars, e-learning platforms, animations, story-boards, quizzes, presentations, digital mind maps, infographics, the use of mobile applications, simulation games and gamification are some of the currently available methods that offer the possibility of an individualised approach to young people, of learning at any time and place, and of better and equal access to knowledge. It's worth noting that the contemporary approach to simulation games is evolving toward the use of artificial intelligence for adaptive learning and big data analysis in the teaching process. These trends, although present primarily in English-language literature (Buckingham Shum & Deakin Crick, 2016), point to the future development of simulation methods in economics education.

Characteristics of the Marketplace "Business Fundamentals" simulation game and its pedagogical objectives

The following section presents an illustrative case study of the Marketplace® 'Business Fundamentals' game, based on published materials and documented design features. This case study is not derived from a primary empirical investigation or specific implementation study, but rather serves to contextualize the theoretical and empirical findings discussed in this article within a concrete example of contemporary simulation game design. The analysis relies on the game's training materials (Innovative Learning Solutions, 2022) and the research literature documenting its pedagogical approach.

"Business Fundamentals" version of Marketplace is a computer simulation game developed by Innovative Learning Solutions, Inc., intended for students of economics and management, particularly at the undergraduate level and introductory MBA programs. The game's scenario is set in the personal computer industry and involves the creation of new businesses by competing teams that simultaneously enter the same market from identical resource and informational positions.

The game is divided into four decision-making quarters, each requiring the management team to make interconnected decisions including: market potential analysis and segmentation, product design (brand design) using Quality Function Deployment (QFD) techniques, advertising campaign planning, sales channel and sales force management, production planning and capacity management, compensation policy, and financial planning and cash flow analysis (Innovative Learning Solutions, 2022). The results of each round are shared in the form of financial statements, balanced scorecards and market reports, providing the basis for strategy adjustments in the following quarter.

Marketplace® „Business Fundamentals” imitates running a business, presents the entirety of many different decisions to be taken, the number of which grows constantly from one simulated quarter to another. The management team's goal is to enter the personal computer market and introduce a new line of personal computers to markets in Asia, the United States, South America, and Europe. Other companies in the industry will also enter the market simultaneously. For simplicity, the personal computer industry is assumed to be in its early stages of development. This means that participants and competitors are inexperienced in the industry, and there is not yet established competition in the market. Furthermore, all teams (players) have the same resources and identical market knowledge (Innovative Learning Solutions, 2022).

These decisions are remarkably similar to those that must be taken by the management board of any newly established entity, but their scope has been limited to the most essential elements. As a result, the complexity of the entire virtual enterprise and of the market in which it operates is maintained, without limiting the realism and the challenges faced by players. Decisions are presented roughly in the order in which they would have to be made in the real world, from the formation of a management team to market analysis, product development, production, advertising, distribution and financing. Just like in the real world, you need to make many strategic and tactical decisions at the same time throughout the game. You cannot postpone the decision about an advertising campaign or market development while deciding the price of a product.

The team of players is faced with both the problem of the interdependence of various decision options related to a specific issue and the relationship between different decision-making areas. One of the aspects that makes the Marketplace such a valuable teaching aid is the possibility to learn to manage in a dynamic and complex world. After identifying the available options and considering the advantages and disadvantages of each of them, the group develops an action strategy, the outcome of which is always uncertain. Risk is another element of this game that can be limited by drawing correct conclusions from the previously undertaken actions and their effects. Therefore, strategies can be amended by finding significant cause-and-effect relationships.

Each market segment has unique needs and desires and consequently requires a different marketing strategy to address them. Therefore, it is necessary to develop and then implement a marketing strategy for selected segments. The management team (usually of 4-5 people) must provide capital (investment financing) to start a business. This money can be used to build a production plant, open sales offices and design brands. The team will have one year (four quarter-years, i.e. decision-making periods) to become successful in the market. During this time, the company should become an independent enterprise, generating significant profits from its activities. The company's total performance includes financial performance, market performance, marketing performance, investment policy, asset management, human resource management, and wealth generation. Starting from Q3, players can check how they are doing. Based on data available or obtained "for a fee", the participants of this game must find out: what are the tastes and preferences of customers; which channels can be used to reach them

with information and with sales offer; how to gain an advantage over competitors; how to reach a potential customer with a product dedicated to them; how many and what employees should be hired; where and how to produce, and how to use the profits (or if and how much to borrow) (Innovative Learning Solutions, 2022).

A key pedagogical feature of the game is the integration of knowledge from various functional areas of the enterprise. Students cannot treat marketing, production, and financial decisions as separate tasks – their interdependencies are encoded in the game mechanism. As explicitly stated in the training materials: "The biggest challenge in the game – as in the real world – is the need to constantly make multiple strategic and tactical decisions simultaneously. Decisions about advertising campaigns or market development cannot be postponed while decisions about product pricing are being made" (Innovative Learning Solutions, 2022, section A).

The educational goal of this simulation game is to acquire the skills of cooperation in a group, which is necessary to implement specific goals in business, and especially taking responsibility for your tasks and their effects, as these make the basis for subsequent decisions to be made by other team members. In this aspect, it is also necessary to practice the skill of conflict management, and in particular of finding a solution consistent with the general long-term needs of the business in the spirit of compromise and striving for a common goal, i.e. achieving commercial success. From this point of view, teamwork means that in carrying out the tasks, a player – instead of focusing on their individual needs and profits – should support others in their work, as this work benefits the entire team. Another important goal of this game is to develop the skill of critical thinking in business, which takes place within the team during their discussions and mutual exchange of ideas, as well as in presenting their arguments when discussing and analysing related economic problems. Undoubtedly, this game teaches how to define priorities, organise work for yourself and for the team (as a team leader) and then perform it in accordance with such priorities, as well as work efficiently (Innovative Learning Solutions, 2022, section A).

By analysing the objectives of this game, which correspond to diverse levels of Bloom's revised taxonomy (Anderson & Krathwohl, 2001), several categories of explicitly stated educational goals can be identified. First, at the comprehension and application levels, the game aims to develop students' ability to interpret market data, translate consumer needs into product specifications, and use management accounting concepts, including activity-based costing and cash flow analysis.

Second, at the analysis and evaluation levels, the game requires participants to identify cause-and-effect relationships between marketing decisions and financial results, assess the profitability of individual brands and distribution channels, and critically evaluate competitor strategies based on benchmarking data. Third, at the creation level, the game stimulates the design of coherent business strategies integrating multiple functional areas and the formulation and presentation of a report to the supervisory board in the fifth quarter, which corresponds to a synthetic academic format. Fourth, in terms of transversal competencies, this game emphasises teamwork, conflict management, leadership, time management, and critical thinking in a business context (Innovative Learning Solutions, 2022, section B). Importantly, the game is not limited to cognitive competencies – it requires participants to negotiate decisions in situations of disagreement, take responsibility for assigned tasks, and learn from mistakes made in previous rounds.

Learning outcomes and limitations of using simulation games

In recent years, research on the effectiveness of simulation games has incorporated new analytical dimensions, such as learning analytics – the analysis of digital traces, which allows for precise mapping of students' decision-making processes (Vieira et al., 2022). Furthermore, in the context of validating soft skills, attempts are emerging to measure long-term learning outcomes through longitudinal observational studies (Marfisi-Schottman et al., 2023).

Empirical research on the effectiveness of simulation games in education has been conducted since the 1960s, but the results are inconsistent, and the methodology is often subject to significant limitations. Early work by Faria and Dickinson (Faria & Dickinson, 1994) indicated a positive impact of business games on student motivation and engagement, although the authors noted difficulties controlling for confounding variables. Wolfe (Wolfe, 1997), in a review of research from 1970–1995, concluded that simulation games had a moderate but relatively consistent impact on learning outcomes, with the effects being stronger for procedural competencies than for declarative knowledge. Sitzmann's meta-analysis (Sitzmann, 2011), comprising sixty-five studies and over 6,000 participants, was groundbreaking in assessing the effectiveness of educational games. The results indicated that game-based training was 20% more effective than traditional methods in acquiring declarative knowledge, 14% more effective in procedural knowledge, and had a 9% higher retention rate. The author also noted a significant moderator: the effects were significantly higher when games were supplemented with traditional forms of

instruction than when they were used as the sole teaching method. Vogel et al. (Vogel et al., 2006) in a similar meta-analysis found that interactive games and simulations outperformed traditional methods in terms of achievement and attitudes toward learning, although the authors noted that the quality of the primary studies varied.

Marfisi-Schottman (Marfisi-Schottman, 2020), in a synthesis of research on the use of games in higher education, indicated that positive effects are most consistently observed in relation to: (a) student engagement and motivation, (b) developing decision-making skills in complex environments, and (c) systems thinking. The effects on declarative knowledge are less pronounced and more dependent on the quality of debriefing. Despite promising results from meta-analyses, conclusions regarding the effectiveness of simulation games should be drawn with caution. A fundamental problem remains the difficulty in controlling confounding variables in studies comparing teaching methods. Sitzmann (Sitzmann, 2011) points out that many studies do not randomly assign experimental and control groups, and the novelty effect may temporarily increase engagement levels regardless of the actual teaching value of the method. Hays (Hays, 2005) further emphasises that most available studies are short-term – it is unclear whether the effects of simulation games are sustainable over the course of months or years.

An additional challenge is the operationalisation of learning outcomes. While declarative knowledge is relatively easy to measure with tests, soft skills – systems thinking, the ability to work in a team, and the ability to make decisions under uncertainty – are difficult to measure in a standardised manner (Wirth & Azari, 2023). This means that empirical studies often focus on easily measurable proxy indicators (student satisfaction, declarative knowledge exam results), which may not reflect the most important effects of using this method (Sitzmann, 2011; Marfisi-Schottman, 2020). Recent studies employing mixed-methods designs and performance-based assessments show promise in capturing soft skills development (Latif & Naseem, 2022), yet comparable frameworks remain underdeveloped across educational contexts.

The issue of instructors' teaching competence is also important. Effectively conducting classes using simulation games requires the instructor to act as a facilitator – not a lecturer – which implies different competencies and work styles (Kolb, 1984). Research indicates that the quality of debriefing sessions, during which students summarise their game experiences and relate them to theory, is critical to learning outcomes (Petranek, 2000; Fanning & Gaba, 2007). A carelessly or inexpertly conducted debriefing can undermine the educational potential of even a well-designed game. The engaging nature of simulation games can paradoxically work against the learning process if students focus solely on winning the competition, neglecting reflection on decision-making mechanisms. This phenomenon – referred to in the literature as "performance orientation vs. learning orientation" – is well documented in educational psychology (Dweck, 1986). Gamification and intense competition can reinforce a focus on results, leading to strategies of minimising risk and imitating successful competitors, rather than experimenting and reflecting on the causes of success and failure.

Discussion and conclusions

The analysis allows for the formulation of several synthetic conclusions, while maintaining the interpretive caution required by the heterogeneous nature of the available empirical base.

First, simulation games are solidly grounded in learning theories – both constructivist and motivational. Kolb's cycle, Deci and Ryan's self-determination theory, and Csikszentmihalyi's flow state concept create a coherent framework explaining why active participation in simulations should foster deeper and more lasting learning than passive knowledge acquisition. The "Business Fundamentals" Marketplace game consistently aligns with this logic: its quarterly structure aligns with the stages of Kolb's cycle, and the progressive complexity of the decision-making environment promotes optimal levels of engagement.

Second, the available empirical research indicates moderate but consistent positive effects of simulation games, particularly in terms of student engagement, systems thinking, and interpersonal skills. However, the effects are clearly contingent on context: the quality of facilitation, the structure of debriefing, and the degree of integration of the game into the broader course curriculum. A game used as an isolated tool, without proper integration within the course framework and without reflective debriefing sessions, loses much of its teaching potential.

Third, the limitations of using simulation games are real and should not be underestimated. The simplified nature of the simulation model, the risk of perpetuating overly deterministic visions of management, cost and organisational barriers, and the potential for competitive orientation to dominate cognitive reflection all argue for a cautious and critical approach to this method.

Based on the analysis, the following recommendations can be formulated for academic teachers who use or are considering using simulation games:

- 1) Integration with the course curriculum. The simulation game should be treated as part of a broader educational context, not as a standalone tool. It should be preceded by a theoretical introduction and supplemented with systematic debriefing.
- 2) Quality facilitation. The instructor's role does not end with launching the game. Regular reflection sessions, in which students analyse their decisions and their consequences in relation to economic and management theory, are crucial to achieving learning outcomes.
- 3) Critical reflection on the limitations of the model. The instructor should explicitly point out the differences between the game environment and economic reality, preventing the uncritical transfer of simulation simplifications to real-world decision-making contexts.
- 4) Considering student diversity. Not all students benefit equally from simulation games; differences in learning style, professional experience, and motivation require varying degrees of support from the instructor.
- 5) Need for evaluation research. Institutions using simulation games should systematically collect evaluation data to assess learning outcomes, ideally using measurement tools that go beyond student self-assessment.

The research field regarding simulation games in economics education remains open to important questions. Longitudinal studies examining the sustainability of learning outcomes over several months or even years are particularly needed. Comparative studies assessing the relative effectiveness of different types of simulation games in the context of specific learning outcomes would also be valuable. Finally, the impact of debriefing quality on the effects of game use remains relatively under-researched – an area with particularly great practical potential.

Simulation games, including the "Business Fundamentals" Marketplace, constitute a teaching method with well-established theoretical justification and proven, though not unconditional, empirical effectiveness. Their value in higher education in economics stems primarily from their ability to create an active learning environment, integrate interdisciplinary knowledge, and stimulate competencies that are difficult to achieve through traditional methods – systems thinking, decision-making under uncertainty, and effective teamwork. Simulation games, however, are not a panacea: their teaching value is strongly determined by the quality of facilitation, the degree of integration with the course curriculum, and an awareness of their inherent limitations. A thorough and critical evaluation of this method, free from both uncritical enthusiasm and a priori scepticism, is a prerequisite for its productive application in academic teaching practice.

Corporate simulation games are used at universities to expose students to real-world business challenges. They are designed to verify and consolidate the previously acquired knowledge and skills. They aim to enhance students' overall business and business management skills. Success in the game is a reflection of effective, continual interactions between students within groups, as well as the proper use of the diverse knowledge possessed by the participants. Moreover, effectively sharing this knowledge is essential to gain an advantage over other groups. This is essential to their success in the game. The intensified exchange of knowledge during the game increases the group's chances of gaining a competitive advantage over their peers (Rui et al., 2015). More importantly, business simulation games support the integration of educational experiences at different levels of education and between different disciplines: economics, management and technology (Bazil, 2012). Games, including simulation games, can also teach interaction, risk-taking, adaptation, providing the necessary information on time and on demand, and embedding it in a specific situation and context (Gee, 2013). Undoubtedly, simulation games develop several skills that are important in today's world, especially teamwork, the ability to make decisions, and analytical skills. Of course, the plot of such a game must be coherent and clear, and above all, reflect the current economic reality with which a young person has daily contact and lives in it, or is likely to soon face it in real life, so that the relations seen in the world of games translate into the real world, and thus the lessons learned from the simulations could be applied in the surrounding reality.

In the era of globalisation of economic processes, it is necessary to emphasise the need to create an entrepreneurial attitude in young people and students and increase their economic awareness in order to help them understand the phenomena occurring around them. It is all the more necessary in the conditions of a labile environment and rapid changes in the economic situation. Such a conscious attitude, as well as knowledge gained and consolidated practically, determines the success of their future business ventures and the reduction of misallocations generating high costs. The lower the knowledge of the course of economic processes is, the greater the economic risk associated with any business activity, and thus the smaller the chances of counteracting threats and identifying and taking advantage of the opportunities encountered.

The development of the information society, the constant emergence of new technologies, and the increasing number of innovations in the field of information technology and communication force the introduction of modifications in the implementation of the educational process, including the teaching measures and tools. The traditional forms of teaching and knowledge transfer, full of routine and monotony, may appear unattractive to the modern recipient of teaching content (especially to the so-called Generation Z), for whom the world of new technologies is a natural environment of their functioning. Therefore, backward and archaic means of transferring knowledge are no longer acceptable, as they constitute a barrier to contact with the lecturer and to the effective development of skills. Hence, there is an urgent need to supplement and change the teaching methods, adapting them to the needs of today's students so that there is no gap between them and the teacher that would impede mutual contact and understanding. In the educational process, the properly prepared educators' use of methods based on modern technologies such as inter alia, computer business simulation games open the door to modern education that activates young people. Of course, such games are only one aspect of education that will grow in importance. For this reason, it is worth integrating them into the educational process today and consolidating them with other teaching methods.

Education must be inspiring, motivating, supporting analytical and critical thinking, developing contemporary and prospective skills, and offering a chance for development and success in life. In the case of economic education, it is intended to additionally stimulate young people to be entrepreneurial or even to simply become an entrepreneur and manager who is fully aware of economic phenomena and processes, can identify them and respond to them appropriately. Thanks to this, modern economic education which uses professional business simulation games is a crucial factor in creating and developing human capital and can facilitate dynamic economic growth in the era of globalisation of economic processes and rapid flow of information.

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