Brzozowska, M., Morawski, P., Kolasińska-Morawska, K., Sułkowski, L., & Seliga, R. (2024). Enhancement of international managerial competencies through business simulation training: The Marketplace simulacrum. *Journal of International Studies, 17*(4), 126-149. doi:10.14254/2071-8330.2024/17-4/8

Journal of International Studies

Centre of Sociological Research

Scientific Papers

Enhancement of international managerial competencies through business simulation training: The Marketplace simulacrum

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Abstract. Socio-technological multidimensionality requires new competencies among workers, both those entering the labour market and those already employed, i.e., middle and senior managers. The purpose of this article is to identify the

Received: February, 2024
1st Revision: June, 2024
Accepted:

December, 2024

DOI: 10.14254/2071-8330.2024/17-4/8

educational potential and evaluate the benefits of simulation interaction games, using the example of the Marketplace simulacrum in improving the management skills and competencies of managers of multinational companies. Representatives of middle and upper management of multinational companies were surveyed using the CAPI (Computer Assisted Personal Interview) technique. IBM SPSS Statistics software was used for data analysis. The research findings indicate that respondents with management experience identified the ability to redefine their adopted management paths as the main benefit of the game. Further, they highlighted the inclusiveness of the game, underlining the significance of communication and human relations in the processes of business management and the integration of technology, talent and tolerance, which are crucial to achieving success. Thus, the Marketplace simulacrum has proven to be a valuable support tool in improving the skills and management competencies of middle and senior management. These research findings can be of use to those responsible for the creation of curricula and the establishment of educational programmes, with a particular focus on lifelong learning and management competencies.

Keywords: edutainment, competence**,** gamification, business simulation, marketplace

JEL Classification: A29, C79, F29

1. INTRODUCTION

The advent of machines has caused a paradigm shift in the linear world of early societies, engendering a widespread transformation in almost all aspects of human activity. There has been a marked increase in the production of goods and the movement of people and resources. Perhaps most importantly, there is now an unprecedented ability to access data and information. From a historical perspective, the evolution of language and the refinement of communication channels in social groups have contributed to the development of civilisation and the propagation of anthropocentrism, a concept recognising humans as the centre of all reality. Concurrent with the emergence and growing prevalence of machines has been the introduction of the concept of technocentrism, i.e., the acceptance of technology as the primary value in the development of civilisation, where humans and machines coexist. The transformation of humanity has occurred over a relatively brief period of time, spanning only three centuries. The advent of printing and the dissemination of texts, along with the emergence of educational institutions, played a pivotal role in the propagation of information and knowledge. This, in turn, gave rise to a multitude of consequences, both progressive and degressive in nature. The transition from a society based on hunting and gathering (1.0) to an agrarian society (2.0), then to an industrial society (3.0), and finally to an information society (4.0), has been accompanied by a significant increase in the dissemination of knowledge. This progression has led to the emergence of a highly intelligent, collaborative, digital society (5.0). In this context, learning, teaching, and education have played a pivotal role in driving change. In the context of societal evolution, the ability to adapt and continuously improve oneself has been instrumental in navigating and capitalising on changing circumstances. The acquisition of new experiences, subsequently disseminated through educational processes, has been a catalyst for economic and social advancement. This dynamic has persisted throughout the course of civilisation, with the fundamental shifts being the transition from information insufficiency to the current state of information abundance.

In the contemporary global context, societies are characterized by the dynamics of change and uncertainty, as evidenced by the prevalence of the VUCA and BANI concepts. In this context, the ability

to verify the veracity, value, and relevance of data is becoming increasingly crucial. Additionally, the capacity for continuous learning, both individually and collectively, is essential for individuals and the artificial entities that collectively form the social substrate. Multinational companies, for instance, are a salient example of this phenomenon, as their survival and competitive advantage depend on the knowledge, skills, and competencies of their workforce. It can be argued that the future of these companies is inextricably linked to the effectiveness of their human resource management model. The practical applicability of the 3T (Technologies, Talents and Tolerance) and 3L (Life Long Learning) models is evident in their commitment to empowering and supporting employees in acquiring new knowledge and enhancing their skills and competencies through both formal and non-formal educational processes, which are integrated into the learning and teaching activities occurring throughout the course of their employment, irrespective of the duration of their employment tenure.

Management can be defined as a set of activities (including planning and decision-making, organizing, directing people, and controlling) directed at the organization's resources (human, financial, physical, and informational) and performed with the intention of achieving the organization's goals in an efficient and effective manner. Those who undertake management activities must possess the necessary knowledge in this regard and have the skills and competencies. The acquisition of these competencies can occur through various avenues, including formal education at universities, formal training programs, and non-formal educational opportunities such as workshops and training. The selection of a particular educational trajectory by individuals aspiring to managerial roles in enterprises is influenced by a multitude of factors, including, but not limited to, age, life stage, financial resources, the availability of leisure time for further education, and the anticipated outcomes of the program. The forms, methods, and techniques of teaching and learning that are adopted play a significant role in this process. These should not only facilitate the achievement of the desired outcome, such as the acquisition of specific knowledge, skills, and competencies, but also unleash motivational potential and stimulate commitment. This consideration assumes particular significance for individuals with extensive professional experience, who possess a unique reservoir of knowledge and expertise. Their expectations are markedly different from those of individuals who are just beginning their careers. In such instances, educational programs must encompass both the content of instruction and the methodologies employed for knowledge transfer. The research findings indicate that learning with the guidance of a mentor and facilitator, who possess knowledge and expertise in a given subject, is highly desirable in such cases. Among the array of didactic methodologies employed, those that are highly activating are particularly sought after. One such methodology is gamification, which has been shown to enhance participant engagement and motivation, thereby promoting effective learning.

The main objective of the article is to identify and evaluate the benefits of the educational potential of simulation interaction games on the example of Marketplace simulacrum in improving the management skills and competencies of managers of multinational enterprises.

The specific objectives were: the theoretical objective defined as the development of indications for the use of business simulations in the processes of informal education of adults with managerial experience, and the empirical objective defined as the verification of the effectiveness of the Marketplace simulacrum in improving the skills and managerial competencies of managers useful in decision-making processes by indicating the benefits of using this educational form. The implementation of the main objective and specific objectives required the use of mixed research methods. Qualitative methods were used first, followed by quantitative methods.

Qualitative research methodologies were used to diagnose the current state of scholarly output in terms of familiarity and prevalence of the subject matter under study, including searching and searching Scopus and Web of Science (WoS) databases for the occurrence and co-occurrence of terms in the subject matter

under study, and critical content analysis covering the existing body of literature. The basis for starting the research procedure was, in the case of the qualitative part, the following research questions:

- RQ1 - what is the relevance and importance of management skills and competencies in the management processes of multinational companies in the face of the challenges of economy 5.0?
- RQ2 - how can gamification and business simulations be an attractive educational form in the formation of the desired management competence skills of managers of multinational enterprises?

After a study of the body of literature, it was possible to define a research gap of an empirical nature, which indicated a poor recognition of the essential components of the construct of applying gamification in the representation of Marketplace simulacrum in the formation of managerial skills and competencies in the teaching and learning process of adults who already have many years of experience in managing multinational enterprises at various levels.

The identification of this gap is detailed in the questions that can be answered after the implementation of quantitative research:

- RQ3 - to what extent were the expectations of game participants who already have many years of managerial experience in multinational enterprises in relation to the business simulation fulfilled, and in what representations?
- RQ4 - in what representations does the mechanics of the Marketplace simulacrum allow a comprehensive view of the implementation of business processes in a multinational enterprise and the transfer of the experience gained from the game to management practice especially for those with managerial experience?
- RQ5 - and in what areas can the Marketplace simulacrum be a useful tool to allow managers of multinational enterprises with individual and team experience to improve their management workshop of decision-making processes?
- RQ6 - and to what extent would the participants of the game recommend Marketplace simulacrum as a form of improving the management workshop of managers with experience in working for international enterprises?

Filling the research gap identified and the questions embedded in it involved the creation of a research model with the identification of the purpose and object of the study and the formulation of research hypotheses, the identification of the study population and the unit of study, the determination of the method of sampling units, the selection of the method of survey implementation, the construction of the measurement instrument, and the selection of methodologies for analyzing the collected data and testing the hypotheses.

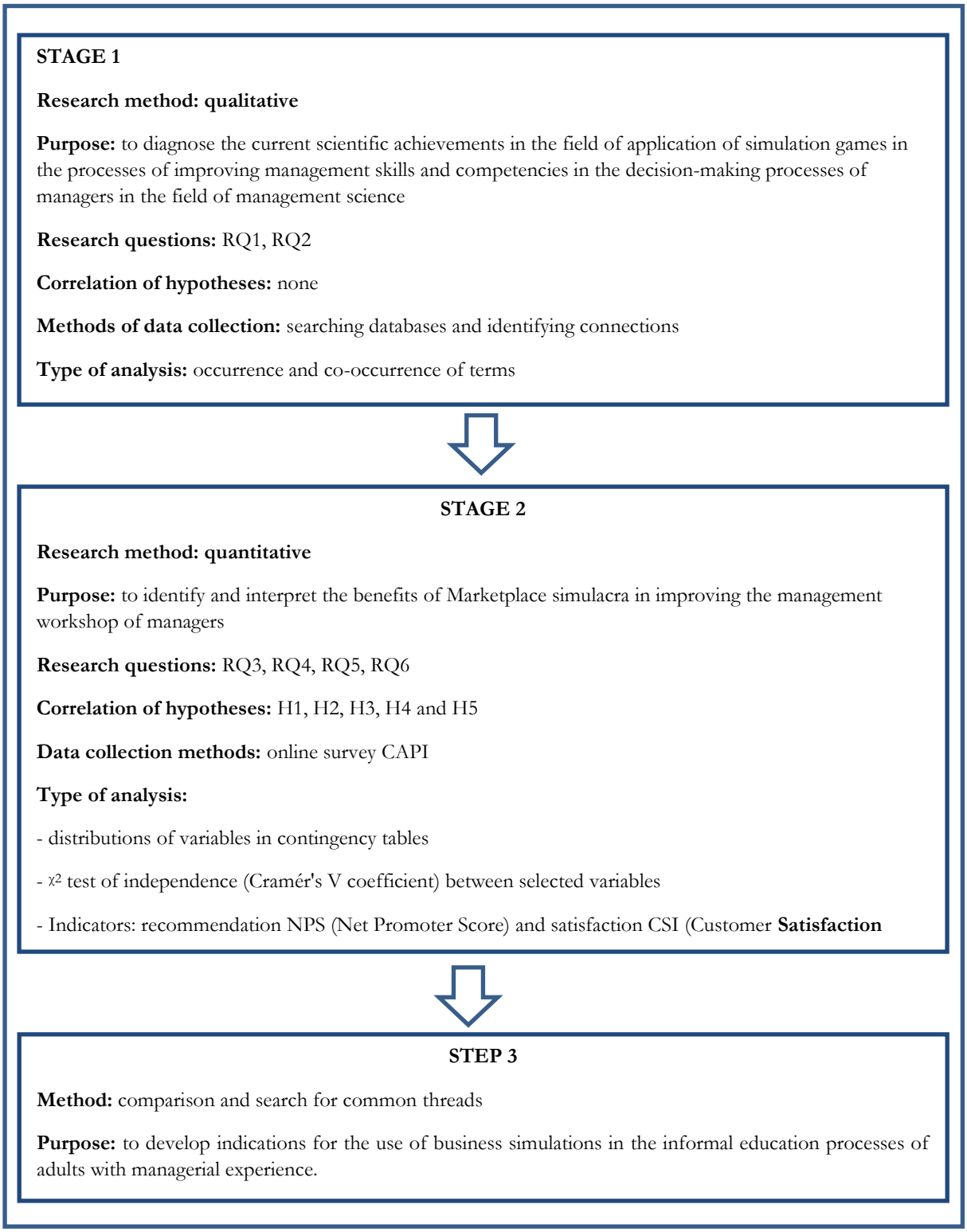

Figure 1. Outline of the research program

Source: own study.

The reader will have a better understanding of the role and importance of using gamification methods and business simulation tools as an effective way to improve the skills and managerial competence of employees with managerial experience in multinational companies after reading the article, especially the conclusions and recommendations resulting from the authors' research.

2. MANAGERIAL SKILLS AND COMPETENCIES NEEDED TO MANAGE BUSINESSES IN THE 5.0 ECONOMY

The environment in which multinational companies currently operate, referred to as VUCA and BANI, is extremely challenging and at the same time activating activity. VUCA (volatility, uncertainty, complexity, ambiguity) refers to an environment with a remarkably high impact on business (Taskan, Junça-Silva i Caetano, 2022). Especially when considering the strategic outlook of business, which is increasingly difficult to determine in the long term. This is due to the many factors that make up this environment, especially in the macroeconomic context, but also in terms of competitiveness. In contrast, entering an environment that is referred to as BANI (brittle, anxiety, non-linearity, incomprehensible) means an even greater degree of misunderstanding and lack of repeatability (del Pilar Barrera-Ortegon, Medina-Ricaurte i Jimenez-Hernandez, 2024). The term BANI was coined based on the transition from the state of VUCA to even more unpredictable conditions in the world of business, politics or social life. The world of BANI means even more challenges that everyone must face. However, it is certainly possible to find some phenomena that will somehow enable survival and even success in this environment.

All these features of the environment force multinational companies to skillfully adapt to the prevailing conditions. This is especially true in the context of the growing role of technology in the business world, but also in society. Industry 4.0 has transformed the perception of the world and moved society into a world of robots and ubiquitous information. Society adapting to this new environment has spontaneously entered the era of society 5.0 (Narvaez Rojas, Alomia Peñafiel, Loaiza Buitrago i Tavera Romero, 2021). This concept involves the use of technology in solving social, but also economic or political problems. The essence is primarily to convince society to use technological innovations, including that part of society that is rather skeptical about the existence of technological innovations (Sá, Santos, Serpa i Ferreira, 2021). The essence will be to point out the possibilities offered using technology in solving the problems of the modern world. Most often, the fear of technology is related to the lack of knowledge about it and the opportunities it can give. Awareness of the existence of appropriate tools and their positive impact on development allows to achieve a sense of security (Li i Huang, 2020).

Of course, the main requirement is to have the right knowledge, skills and competencies to be able to apply technology in the right way. This is especially true among multinational companies, which are mainly looking for employees with a certain set of competencies and skills. Having the right knowledge is mainly associated with formal education, although, of course, during various training courses, this resource can also be acquired (Jarząbek and Stolarska-Szeląg, 2024; Samoliuk et al., 2021). However, it is competencies and skills that are very often the subject of shaping during training and workshops. This becomes especially important in the case of employees with many years of seniority, who, having already had some experience, must constantly adapt to the changing conditions in which they make managerial decisions. It is most often those with longer seniority who hold managerial positions, and it is important that they are the ones who have the right skills and competencies to build strategies in this challenging, changing environment (Devkota et al., 2022) (Kolade i Owoseni, 2022). In the literature you can even find the term employment 5.0 (employment 5.0), which refers to changes in the education system, but also investments in retraining and upskilling. Especially in the context of the use of technology and a different approach to an unpredictable world, based on greater automation, creativity or cooperation. Also, the reference to agility will certainly be

helpful in the aspect of society 5.0, as it will allow for more opportunities to exploit potential in such important areas as software development (Garcia, Pardo Calvache i Álvarez Rodríguez, 2022) (Ahmed, Mrugalska i Akkaya, 2022) whether engineering (Latha i B, 2020). The changing environment is forcing employees to adapt to new employer needs. Some of the most desirable competencies include cognitive, cross-cultural, analytical, and personnel efficiency competencies, among others (Shet, 2024), (Zsigmond and Mura, 2023). Skills and competencies related to digitization are also important (Bilan et al., 2023; Kovacs and Vamosi Zarandne, 2022), (Nowacka i Rzemieniak, 2022).

The required competencies or skills can be acquired in a variety of training courses that point to specific mechanisms of action. However, many studies indicate that the best way is through experience. It is not always possible to participate in all unpredictable situations, so experience can be sought in the possibilities of technology, such as the use of virtual reality (Wu, Manabe, Marek i Shu, 2021), gamification (Angelelli i inni, 2023) (Santos-Guevara i López, 2020) whether simulations (Salminen-Tuomaala i Koskela).

3. GAMIFICATION AND BUSINESS SIMULATIONS

Gamification and business simulations play a pivotal role in the enhancement of managerial competencies. These simulations integrate engaging competitive elements with realistic business scenarios, thereby motivating managers to actively engage and hone their skills. These tools enable practical, risk-free testing of managerial decisions and strategies, thereby facilitating a more profound comprehension of management processes and the cultivation of essential competencies within the context of authentic business challenges. All activities are conducted within a secure and meticulously controlled business simulation environment, under the guidance of a certified trainer. A critical component of the evaluation process involves an analysis of the applicability of gamification techniques and business simulations in business management, according to the 3L model. The focus is on the effective utilization of these tools, systems, and applications in business practice to enhance managerial commitment, motivation, and the development of competence. The implementation of appropriate gamification mechanisms, such as rewards, challenges, and rankings, enables managers to enhance their decision-making and strategic skills in a controlled simulation environment, thereby fostering teamwork. The efficacy of these methods is substantiated by numerous real-world business operations, exemplifying their versatility across diverse industries and contexts. The Marketplace business simulation will be used as an example to demonstrate how gamification and simulations can contribute to the optimization of management processes, the motivation of employees, the delegation of tasks, the cultivation of team responsibility, and the making of strategic business decisions.

The concept of simulacrum, in line with Jean Baudrillard's theory, explores the idea that in postmodern society, representations of objects or ideas, simulacrum, can replace reality itself, creating a world in which the differences between reality and simulation are blurred. When applied to business simulations, the concept raises questions about how consumer experiences and behavior are shaped by these constructed realities. The concept of simulacrum in business simulation explores how artificial constructs shape perceptions of business reality, influencing both decision-making and learning processes. A study conducted by (Esben Langager Olsen, 2022) analyzes game-based business simulation, treating it as a "business simulacrum" that coordinates economic and business practices through representations rather than direct reality. Drawing on Lyotard's theory, the research highlights how these simulacrums performatively create business reality, translating abstract business concepts into tangible, relatable figures. Simulation facilitates reflection on business challenges, such as change management, by engaging students in these constructed realities, influencing their subconscious engagement with business models. This work suggests that simulations not only mimic business, but actively shape participants' understanding through interaction with

the simulations. In a similar vein (Elliott, 2017) discusses simulacrum in historical video games, emphasizing that simulations in games such as Skyrim are not only entertainment, but also a form of education, shaping the way users understand history. Both studies emphasize that simulacrum in simulations affect not only learning, but also perceptions of real-world systems.

The terms "decision game" and "simulation game" are not clearly defined in the literature; as Wardaszko notes, "there is an unwritten assumption in the literature that the reader knows what a simulation game is." Authors of available studies use the following terms as synonyms." "simulated management", 'simulated operations', 'simulation game', 'simulated management game', 'game' and 'simulation'. In this study, the authors use the term "simulated decision-making game," which, according to the authors, best captures the essence of this tool. (Wardaszko, 2013)

Simulation is an active teaching and learning method that mimics reality to provide experiences similar to those in the real world. A simulation is a concrete situation in which roles are played according to the description of the real world. The goal of a simulation is to represent a process from beginning to end. Therefore, simulations can be seen as miniature images (representations) of reality or models of social, political or economic processes. A simulation game is a special combination of three elements: game (understood as rules), roles (assigned to participants) and simulation. (Rizzi i Woźniakiewicz, 2008).

The Marketplace educational game is a digital team game that allows to simulate management conditions in a dynamic and complex business world which allows to assign it the label of simulacrum. Participants of the game have at their disposal several sets of business simulation scenarios. Each time the game reflects the reality of a dynamic and complex business environment with a variety of trends, competitive actions and customer dictum. Using the Marketplace software, players make strategic and tactical decisions within virtually operating enterprises, allowing them to practice improving management skills and competencies under controlled conditions. The structure and organization of enterprises and the ways in which team members make decisions are analogous to those in the real economy. The only difference is that everything takes place in a simulated digital game space model. The gameplay process involves assigning a role to each player, responsibilities and powers mirroring the structure of real-world businesses.

4. MARKETPLACE SIMULACRUM AS TOOL TO SUPPORT MANAGERIAL ACTIVITIES IN THE LIGHT OF RESEARCH

4.1. Methodology

The theoretical underpinnings of the extant research, which encompass the domains of enhancing managerial competence and skills, in addition to gamification and business simulation, have been thoroughly examined through a qualitative analysis of extant literature. These theoretical underpinnings have served as the foundation for a practical verification of the scope of utilization of simulated decision-making game solutions in the representation of Marketplace simulacrum, in the context of enhancing managerial competence and fostering teamwork within managerial practice.

From November 2023 to May 2024, a project was implemented that included the preparation and implementation of a study of the attractiveness of the Marketplace simulacrum in the process of improving the skills and competencies of managers based on quantitative research methodology. Participants of the competing teams were middle and senior managers and owners of multinational companies. The stated empirical objective was to identify and interpret the benefits of Marketplace simulacrum in improving the management workshop of managers. The object of measurement was the expectations and opinions of participants on the usefulness of Marketplace simulation in business practice. Due to the object thus defined,

it was an exploratory study of a descriptive and explanatory nature. Descriptiveness boiled down to drawing up characteristics of the attributes of the Marketplace simulacrum, while explanatory was concerned with determining the relevance and impact of the usefulness of the simulacrum's attributes on improving managerial skills from the perspective of the participants of the games.

The implementation of the study's assumptions of a quantitative nature was based on the methodology of inductive proof based on two research hypotheses:

Hypothesis 1: The components and sequence of implementation of the Marketplace simulacrum game builds positive experiences usable in business practice by participants.

Hypothesis 2: The way the facilitator works with the Marketplace simulacrum influences the perception of the game as engaging and not boring.

Hypothesis 3: The Marketplace simulacrum influence the perception of business processes by the participants of the game from a narrow area view to a comprehensive view of the multinational enterprise with an indication of the attributive importance of the coexistential bond in the form of communication and labor relations.

Hypothesis 4: Participation in the Marketplace simulation positively influences individual and team absorptive capacities in terms of management skills and competencies of game participants supporting the process of improving the management workshop of middle and senior managers of multinational enterprises.

Hypothesis 5: Marketplace simulacrum is appreciated and recommended by the participants of the games of middle and senior managers of international enterprises as an important tool for improving management skills and competencies.

Verification of the hypotheses thus stated required the collection of information from participants in Marketplace simulation games. It was assumed that the study population would consist of middle and senior managers with a minimum of 2 years of experience employed on a full-time basis in multinational companies. Based on the profiling factors thus assumed for the study population, the size of the study sample was set at n = 127 units. The method of selecting units for the sample was based on the method of purposive selection of typical units. With such defined boundary conditions for the selection of units, the study can be considered fragmentary and deterministic. According to the postulate of hermeneutic isomorphism, obtaining information from a part of the collective, which is a component of a larger whole, will allow to substitute suppositions and infer the collective based on the indicated sample. To organize the survey, the expert opinion survey method was used with digital support CAPI (Computer Assisted Personal Interview), a standardized in-depth individual interview technique. The research tool was a conventional artificial tool, i.e., a questionnaire consisting of 21 questions including 14 closed-ended questions (4 based on Rensis Likert scaling of attitudes), which was digitally compiled and uploaded to the www.webankieta.pl platform.

The procedure for implementing the survey was concurrent with the implemented games and consisted of three stages. In the first stage, even before the gameplay began, participants were required to log on to the indicated link with the posted questionnaire and answer questions about their experience with games simulating market processes and their expectations of the Marketplace simulation in which they were to participate. Subsequently, in the second stage, a game was implemented covering 8 quarters during which managerial skills and competencies were improved by the game participants in accordance with the accepted assumptions of the Marketplace simulacrum. In the third and final stage of the study, after the simulation was completed, gameplay participants logged back into the research platform. Their task was to generally evaluate the simulation against the fulfillment of expectations as well as to assess the technical components of the simulation and suitability by virtue of their function in the international organization. Adopting the research procedure in this way allowed the survey to be supervised.

The survey data obtained were anonymized and coded in IBM SPSS Statistics. They were then verified and validated, allowing the material to be checked and assessed for suitability for statistical processing. After passing this stage, the material could be subjected to a proper three-stage analysis.

In the first stage of analysis, the data were aggregated into tables of distributions of values of response options obtained from both the core and metric questions. In the next stage of analysis, reference was made to the answers given to the core and metric questions by compiling the results in the form of contingency tables, and verification of the existence of possible relationships between the selected variables was made using the χ2 test of independence in the form:

$$\chi^2 = \sum_i^r \sum_j^s \frac{(n_{ij} - \tilde{n}_{ij})^2}{\tilde{n}_{ij}} : \chi^2_{(r-1)\cdot(s-1)}$$

Where:

nij – Empirical conditional counts derived from the contingency table,

$\tilde{\boldsymbol{n}}_{\boldsymbol{ij}}$ – theoretical conditional counts that would occur in the array if the features were independent

Cramér's V coefficient, calculated from the formula, was used as a verifier to confirm the existence of the relationship:

$$\mathcal{V} = \sqrt{\frac{\chi^2}{n \cdot min(r-1, k-1)}}$$

Where:

$\boldsymbol{\mathcal{V}}$ — is Cramér's V coefficient between two variables

$\boldsymbol{\chi^2}$— the result of the χ2 test for a pair of variables

n - number of observations

r - number of levels of one variable

k - the number of the second variable

min (r-1, k-1) - the value is selected from the two (r-1) or (k-1), which is smaller.

In the third stage of analysis of the acquired material, methodologies were applied to depict the level of players' satisfaction with participation in the Marketplace business simulation in the form of the values of the NPS (Net Promoter Score) command indicators, also known as the Net Recommendation Index, and CSI (Customer Satisfaction Index) satisfaction, as well as to present maps of matching expectations and Marketplace simulator evaluation. Such a three-step procedure made it possible to obtain material for the verification of the set research hypotheses of the empirical material, the results of which are presented later in the article.

4.2. Empirical results

The research material obtained from the participants of the Marketplace simulation made it possible to conduct an analysis covering their previous experience with simulation games, to compare their expectations and feelings towards the simulation in the process of the implemented games, to attribute simulacrum as a representation of the holistic universe of the functioning of multinational enterprises, to verify the usefulness of simulacrum in the process of improving the management workshop of managers in terms of skills and competencies in both individual and collective areas from their perspective, and to assess the satisfaction of the participants of the games.

The profile of participants in Marketplace simulation games, which are also the research sample, is dominated by men (67.72%) compared to women (32.28%). In the age structure, the dominant part (62.20%) were respondents between the ages of 31 and 45. One in five respondents (23.62%) reached the age of 46-60, and one in ten (14.4%) was under 30. Nearly half of the respondents (49.61%) had a lot of

work experience working 16 - 20 years in managerial positions in international companies, and one in five (20.47%) respondents had a lot of experience. Slightly more than one in ten respondents (14.96%) admitted that their managerial experience in inter-naval companies was at an average level of 11 - 15 years. A negligible portion of the survey sample consisted of respondents whose managerial seniority in inter-naval companies was 5-10 years or less than 5 years (7.87% and 7.09%, respectively). Relative to the size of the companies where the respondents were currently employed, an almost even distribution is evident. One in three respondents admitted that they work in a company with an employee size between 251 - and 500 or between 50 - and 250 (36.22% and 30.71%, respectively). Only one in four (25.20%) respondents indicated that they work in an enterprise with more than 500 employees. A negligible share (7.87%) were employed in enterprises with fewer than 50 employees. Respondents represented enterprises with both dominant European capital (58.27%) and entities with international capital (41.73%). Among the respondents, mid-level employees in the management hierarchy dominated (68.50%) compared to senior employees/owners (31.50%). Respondents represented a variety of industries including IT/new technologies (15.75%), energy (14.17%), transportation and warehousing (14.17%), tourism and hospitality (13.39%), automotive (10.24%), banking and finance (10.24%), construction (8.66%), media (7.87%) and training (5.51%).

Among all respondents, only one in ten (11.8%) of all respondents had experience with games that simulate market processes. One in five (26.67%) of the portion that had experience with simulation games said that such a game covered all departments of a company, while one in ten (13.3%) said that it referred only to accounting and financial issues. Most respondents among this group (73.33%) reported that they were paper versions versus electronic versions (26.67%). On the other hand, considering the way the game was implemented, they were mostly individual games, i.e., one-on-one (73.33%) versus team games (26.67%). Only one person (6.7%) admitted to having played a game against a computer in the past. This group of respondents, which was not large in numbers, who had previously played games simulating market processes did not regard these games as a form of stress relief (26.67%), a way to gain knowledge (33.33%) and new skills (40.00%), but mainly regarded the game as great entertainment (93.33%) and a way to meet new people (73.33%).

Few players among all survey participants (20.47%) had heard of Marketplace Simulacrum before the game was announced, compared to those saying they had never heard of or played the game before (79.53%). All survey participants (100.0%) say that upon hearing about the opportunity to participate in training based on gameplay in a simulated environment taking their time, they had certain expectations from the game. Analyzing the respondents' indications prior to the implementation of the gameplay through the prism of the weighted average, it can be concluded that the most important incentive for participants to participate in the simulation was the way of implementing the gameplay so that the game is not boring (4.59). Next were the relevance of the effect of the experience gained during the game, which could be used in business practice (4.50) and the interactivity of the game adapted to the realities of the market (4.45). The least important incentive was the selection of game components reflecting the products and processes implemented at the company where the respondent was employed (4.15). To meet such indications, it was important to prepare the simulation both from the technical side through the selection of an appropriate game variant, and from the operational and relational side through the preparation of the instructor to conduct a specific game.

The evaluation of each game carried out made it possible to verify the expectations of the participants with their feelings. The compiled data shows that the highest rated factor, and thus the most important for the participants of the simulation, was the interactivity of the game indicating the adaptation of the gameplay to the realities of the market (5.09), which exceeded the expectations of the players (+0.65). Another was the expectation that the game should arouse engagement and not be boring (4.69), whose value was also exceeded (+0.10). The next factor characterizing the game was that the experience gained during the game

could be used in business practice (4.48), which slightly deviated from expectations (-0.10). The lowest rated factor characterizing the game was the selection of game components reflecting the products and processes implemented at the company where the respondent was employed (3.89), which was also below respondents' expectations (-0.26).

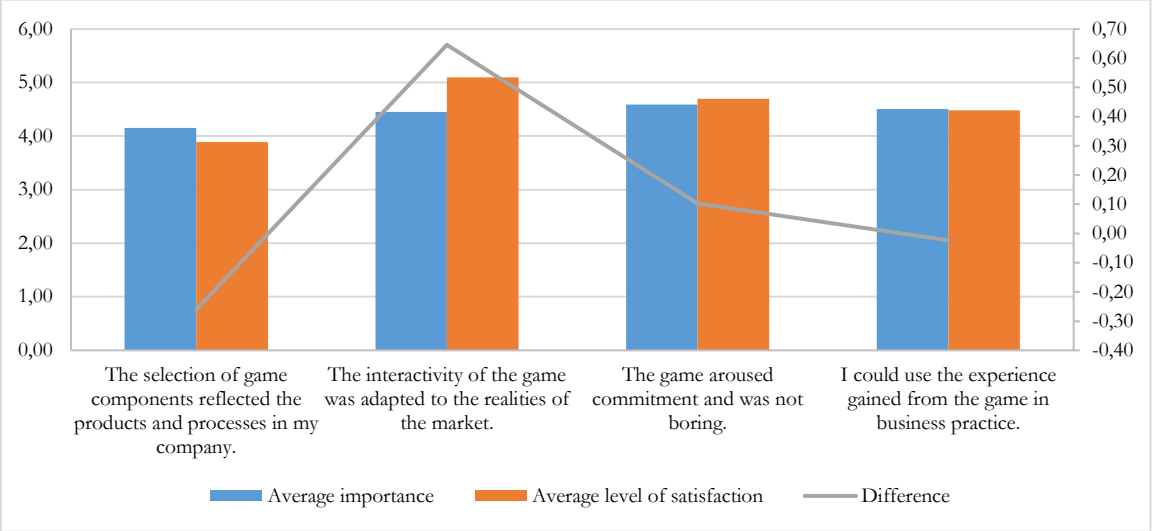

Figure 2. Results of weighted importance and evaluation factors characterizing the Marketplace simulation game (n=127)

Source: own study.

Negative values (Figure 2.) referred to as competence gaps can inspire improvements for the game developer. Analyzing the results obtained, one can make a conjecture that a lower match between the game and business practice may result in a lower perception of convergence between in the assessment of the game's suitability for business practice. Thus, it may have been worthwhile for the manufacturer to create more representations of the game's product variants. Each time after the implemented game, participants not only verified the effects with expectations, but assessed the degree of attribution for the technical (components and sequence of game execution) and operational (actions of the handler) components of Marketplace simulation solutions. When analyzing the technical aspect of the game, respondents were very positive about the tools and reporting capabilities of the decisions made in the game (8.08). Other positively appreciated attributes of the game according to respondents are the components and sequence of the game's execution (6.87) and the number and duration of individual games (5.94), which are specified in the gameplay. On the other hand, the visualization of the game in the area of the graphical interface (5.02) and the intuitiveness of the game (4.87) were rated the lowest. On the other hand, analyzing the relational aspect of the game, it was the survey participants who positively assessed both the way the instructor conducted the game (7.89) and the conduct of the simulation in English (7.76). The juxtaposition of the evaluation of the fulfilled expectations of the respondents (players) with regard to the Marketplace simulation with the evaluation of individual technical and relational components of the gameplay made it possible to verify the possibility of the existence of a relationship between the selected variants of the variables and to indicate the strength of the relationship between them (Table 1).

Table 1

Fulfilled expectations set for Marketplace with respect to evaluation of technical and relational components of simulacrum (n=127)

	Interactivity of the game adapted to the realities of the market			Interactivity of the game adapted to the realities of the market			Interactivity of the game adapted to the realities of the market		
Variable	χ^{2a}	p^b	V^c	χ^2	P	V	χ^2	p	V
Components and sequence of game implementation	8.642	0.373	0.184	7.668	0.467	0.174	11.694	0.005	0.215
Running the game in English	9.909	0.129	0.198	19.890	0.003	0.280	18.206	0.006	0.268
Number and duration of each quarter in the games	12.780	0.236	0.224	2.961	0.982	0.108	25.000	0.005	0.314
Visualization of the game - graphical interface	10.296	0.740	0.201	4.375	0.993	0.131	34.005	0.002	0.336
Intuitiveness of the game interface	21.489	0.044	0.291	16.527	0.168	0.255	14.912	0.246	0.242
The way the instructor works with the simulation	4.990	0.545	0.140	12.898	0.045	0.225	20.016	0.003	0.281
Tools and options for reporting decisions made	14.778	0.064	0.241	5.238	0.732	0.144	64.907	0.001	0.506

[a] $\chi 2$- test value at $\alpha=0.05$ [b] p - asymptotic significance [c] Strength of relationship calculated using V-Cramer

Source: own calculations in SPSS.

In the next step, an analysis of the perception of Marketplace simulacrum as a tool that allows a comprehensive view of the implementation of business processes in an enterprise was carried out through the lens of the mechanics of business simulation operation.

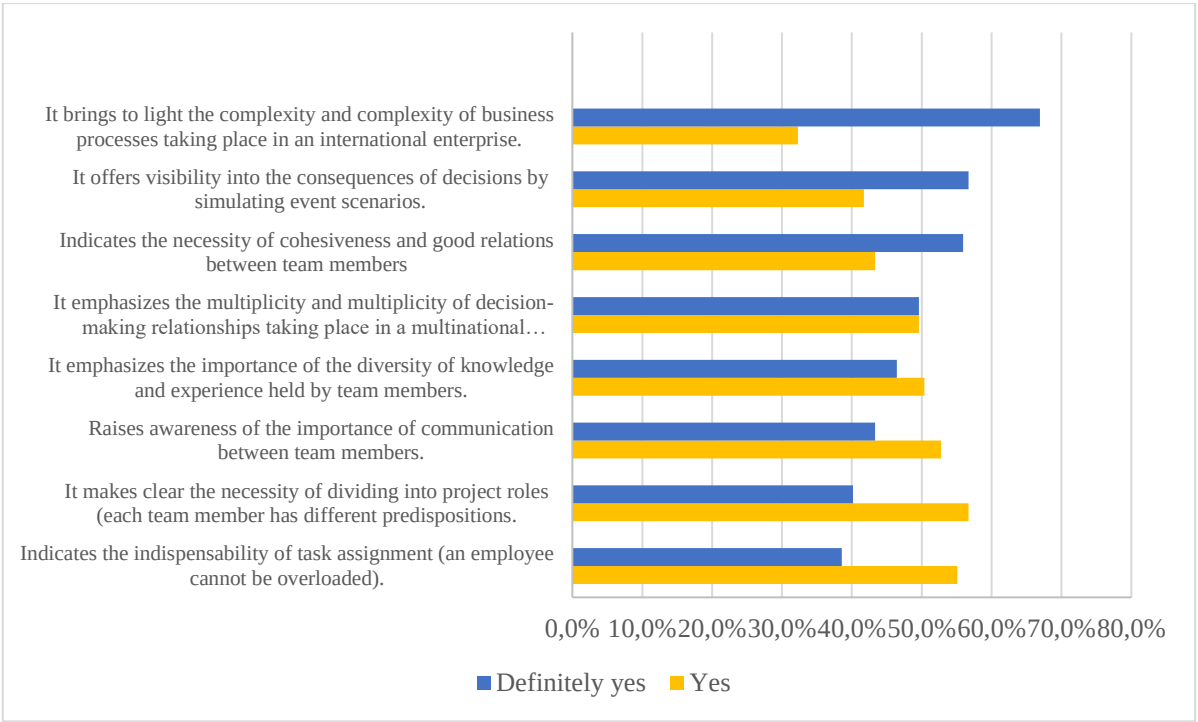

Figure 3. Perception of Marketplace simulacrum in relation to business processes taking place in the company through the prism of participation in the simulation game (n=127).

Source: own study.

Definitely yes according to respondents, Marketplace simulacrum realize the complexity and complexity of business processes taking place in a multinational company (66.9%). This is represented in the form of the components of the Marketplace simulacrum's mechanics of operation, which finds implementation in offering visibility of the consequences of decisions by simulating event scenarios (56.7%), indicates the necessity of cohesiveness and good relations between team members (55.9%), accentuates the multiplicity and multiplicity of decision-making relationships taking place in a multinational enterprise (49.6%), and the importance of the diversity of knowledge and experience possessed by team members (46.5%). In addition, respondents appreciated the game for sensitizing the importance of communication between team members (43.3%), the necessity of dividing into project roles and the fact that each team member has different aptitudes (40.2%) as well as the fact that the assignment of tasks should be such as not to overload the employee (38.6%) (Figure 3).

Table 2

Perceptions of Marketplace simulacrum relative to opportunities to gain experience for use in business practice (n=127)

	Lessons learned during the game usable in business practice		
Variable	χ^2	p	V
Makes clear the complexity and complexity of business processes taking place in a multinational enterprise.	1.028	0.598	0.090
Emphasizes the multiplicity and multifaceted nature of decision-making relationships taking place in a multinational enterprise.	2.081	0.721	0.091
Offers visibility into the consequences of decisions by simulating event scenarios.	2.181	0.702	0.093
Emphasizes the importance of the diversity of knowledge and experience held by team members.	33.423	0.001	0.363
Makes clear the indispensability of the division into project roles (each team member has different predispositions).	33.700	0.001	0.364
Indicates the indispensability of task allocation (an employee cannot be overloaded).	16.124	0.003	0.252
Raises awareness of the importance of communication between team members.	8.310	0.081	0.181
Indicates the indispensability of cohesiveness and good relations between team members	4.614	0.329	0.135

a χ2- test value at α=0.05 b p - asymptotic significance c Strength of relationship calculated using V-Cramer
Source: own calculations in SPSS.

By juxtaposing the attribution indications of the Marketplace simulacrum's advantages with the ratings of fulfilled expectations of the respondents (players) with respect to the Marketplace simulation, it was possible to verify the potential relationships between the selected variants of variables and to indicate the strength of the relationship between them (Table 2.).

Another issue worth analyzing was the question of the usefulness of simulacrum in the process of improving the management workshop of managers in terms of skills and competencies of resource management in both individual and collective areas from their perspective. So, in the research process, a verification analysis of the impact of simulacrum on the players/respondents was carried out based on the weighted average for the level of importance and the rating expressing the degree of satisfaction in the individual and collective statements with the representation of visualization of perception maps.

The most important individual skills and competencies by virtue of their function in the company, according to players/respondents, are conciliation skills for finding common solutions (7.31), assertiveness skills (7.30), reliability and diligence in performing assigned tasks (7.28), ability to anticipate events (7.28)

and patience in completing tasks. Also important are consistency in decision-making (7.22), firmness by arguing for the rightness of one's choices (7.20) and communication skills in the form of concretizing statements (7.19). The least important, according to respondents, are innovation (6.99), unconventionality in finding solutions (6.91), initiation of processes and events (6.73) and creativity (6.72).

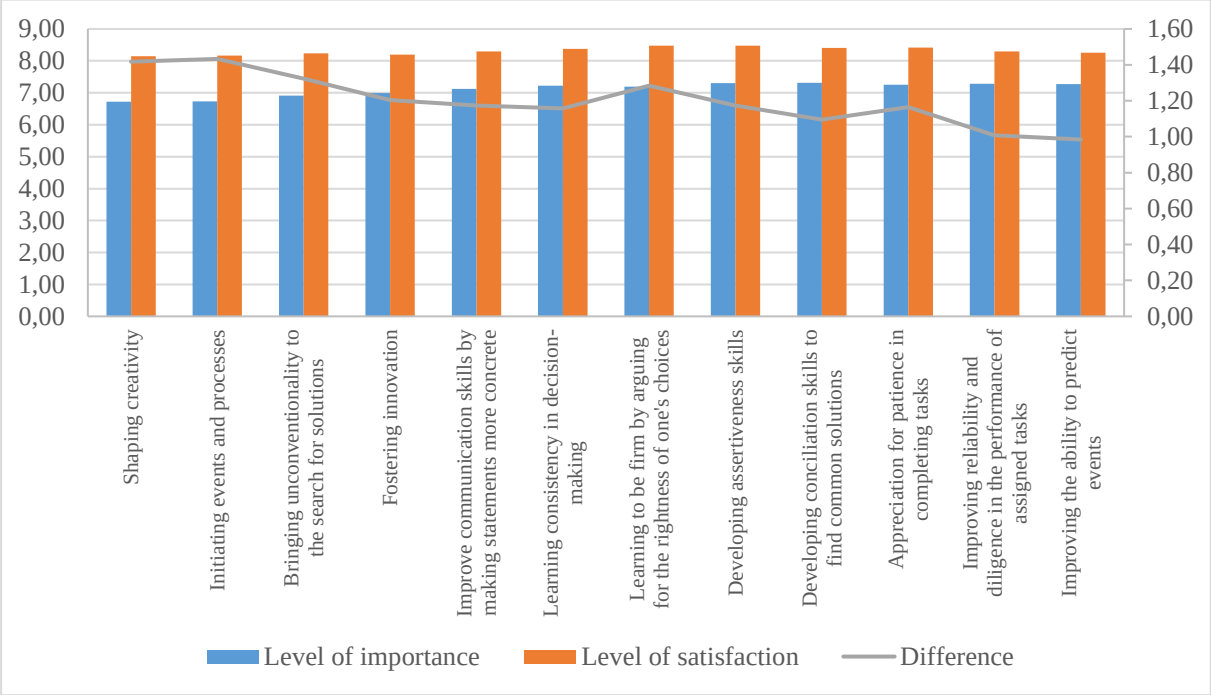

Figure 4. Area differentiation - importance and ratings from Marketplace simulation components by function individually (n=127).

Source: own study.

Juxtaposing these expectations with the assessment indicated in the chart (Figure. 4), it was possible to show discrepancies. A significant fact is that for each of the components of skills and competencies to perform functions in the organization on an individual basis, the rating assigned from participation in the Marketplace simulation was higher than the validity representing the respondents' expectation. The highest difference indicating remarkably high impact of the simulation includes initiation of events and processes (+1.43), creativity (+1.42) and unconventionality in finding solutions (1.32). Next, high impact is seen for decisiveness by arguing for the rightness of one's choices (+1.28), communication skills in the form of concretizing statements (+1.17), assertiveness skills (+1.17), patience in completing tasks (+1.17) and consistency in decision-making (+1.16). A weak level of impact, though still above the level of importance/expectations, was seen in the case of conciliation skills in terms of finding common solutions (+1.09), reliability and diligence in terms of performing assigned tasks (+1.01) and the ability to anticipate events (+0.98). Such results indicate that the simulation in terms of individual usefulness by virtue of function exceeded participants' expectations.

In addition, analyzing the results in the representation of the perception map (Figure 5.), it can be concluded that all components of the effects of participation in the Marketplace game in terms of individual usefulness by virtue of function fall into the second quadrant indicating the need to maintain the current result.

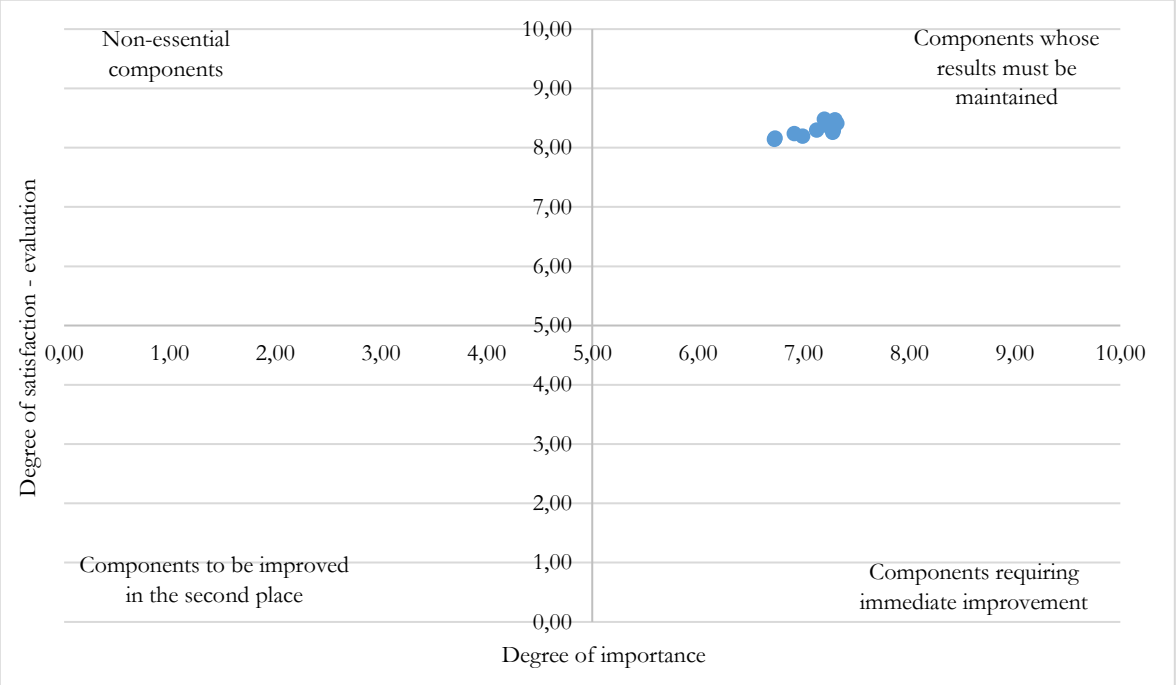

Figure 5. Map of perceptions of the importance and ratings of Marketplace simulacrum components by virtue of their function in the organization on an individual basis expressed as a weighted average (n=127).

Source: own study.

Thus, it can be concluded that in terms of individual skills and competencies by virtue of their function in the company, according to players/respondents, the Marketplace Simulacrum as a tool for improving skills and competencies performs very well, which is also reflected in the determined value of the CSI (Customer Satisfaction Index).

When considering the evaluation of the degree of satisfaction with the opportunities offered by the Marketplace simulacrum for improving individual competencies and skills necessary for the function, a score of 8.31 out of a possible 10 points was obtained, which should be considered good. And while the score is correct according to the perception map, there are areas that should be corrected. Among other things, these are the issues of the functionality of simulacrum that enable the formation of creativity, initiation of events and processes, arousal of unconventionality in the search for solutions, and arousal of innovation, which received an average score of less than 0.7 and affect a significant reduction in the final score.

Juxtaposing the indications of skills and competencies by virtue of their function in the company on an individual basis with the assessment of the possibility of gaining experience to use in business practice in the opinion of the respondents, it was possible to verify the potential relationships between the selected variants of the variables and indicate the strength of the relationship between them (Table 3).

Table 3

Area differentiation - importance and evaluation of Marketplace simulation components by virtue of function in individual terms relative to the opportunity to gain experience for use in business practice (n=127)

Response Variant	Response Variant	Response Variant	Response Variant			Response Variant		
			χ^{2a}	p^b	V^c	χ^{2a}	p^b	V^c
Shaping creativity	6.72	8.14	10.166	0.038	0.283	13.016	0.005	0.320
Initiating events and processes	6.73	8.17	9.803	0.044	0.278	5.621	0.345	0.210
Inciting unconventionality in the search for solutions	6.91	8.24	7.901	0.095	0.249	4.996	0.416	0.198
Fostering innovation	6,99	8.20	9.252	0.099	0.270	9.995	0.075	0.281
Improving communication skills by making statements more concrete	7.13	8.30	8.242	0.143	0.255	5.034	0.412	0.199
Learning to be consistent in decision-making	7.22	8.38	3.665	0.599	0.170	9.008	0.109	0.266
Learning firmness by arguing for the rightness of one's choices	7.20	8.48	7.391	0.193	0.241	8.835	0.065	0.264
Developing assertiveness skills	7.30	8.47	8.381	0.136	0.257	13.333	0.010	0.324
Developing conciliation skills for finding common solutions	7.31	8.41	9.858	0.079	0.279	7.850	0.165	0.249
Appreciating patience in completing tasks	7.25	8.42	4.976	0.419	0.198	5.363	0.373	0.205
Perfecting reliability and diligence in carrying out assigned tasks	7.28	8.29	11.632	0.020	0.303	2.875	0.579	0.150
Perfecting the ability to anticipate events	7.28	8.26	7.553	0.109	0.244	4.673	0.323	0.192

[a] χ^2 – value of the test with $\alpha=0.05$ [b] p – asymptotic significance [c] Strength of relationship calculated using V-Cramer

Source: own calculations in SPSS.

On the other hand, the most important team skills and competencies by virtue of one's function in the company, which the Marketplace simulacrum allows to shape, according to players/respondents, are first and foremost the ability to manage crisis situations and conflicts (7.46), to supervise and control team members (7.41), to be able to assign roles and tasks in the team (7.34), and to inspire others to action (7.33). Also important are the ability to involve others in the process of achieving a goal (7.32), building and nurturing good relationships and creating bonds within the team (7.31), arousing and stimulating motivation for action (7.31), ensuring a constant flow of information within the team (7.31) and the ability to influence

others (7.31). Least important according to respondents are Leading and caring for the team (7.27) and shaping responsibility for the work of the team (7.24).

Juxtaposing these expectations with the assessment indicated in the chart (Figure. 6.), it was possible to show discrepancies. A significant fact is that for each of the component skills and competencies for performing functions in the organization in team terms, the rating assigned from participation in the Marketplace simulation was higher than the validity representing the expectation of the respondents. The highest difference although not as high as in the case of individual impact is in the areas of taking care of the constant flow of information in the team (+1.08), the ability to manage crisis situations and conflicts (+1.08), forming responsibility for the work of the team (+1.07), building and nurturing good relationships and creating bonds in the team (+1.06), arousing and stimulating motivation for action (+1.05) and the ability to influence others (+1.03). There is even less variance for leading and caring for a team (+0.99), the ability to assign roles and tasks in a team (+0.98), inspiring others to act (+0.98) and the ability to involve others in the process of achieving a goal (+0.98). In contrast, the smallest discrepancy is in the area of supervising and controlling team members (+0.91).

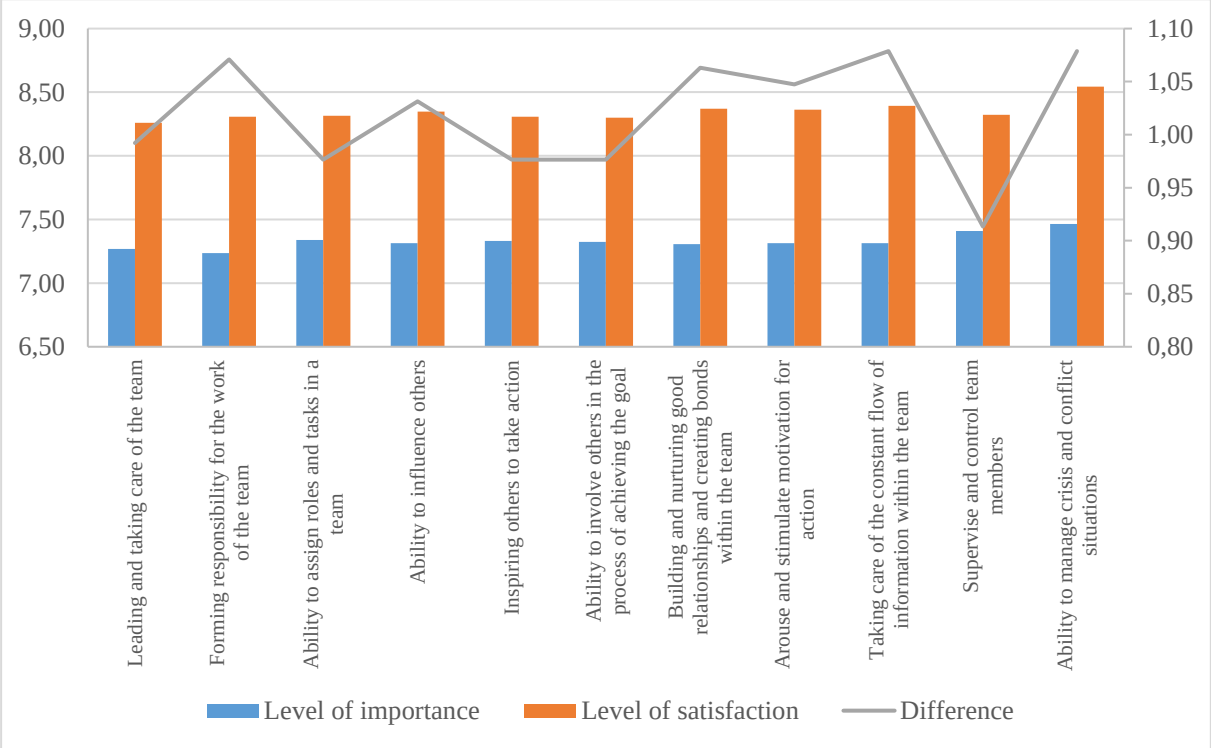

Figure 6. Differentiating areas - significance and assessments from Marketplace simulation components by function in a team perspective (n=127)

Source: own study.

In addition, analyzing the results in the representation of the perception map (Figure 7), it can be concluded that all components of the effects of participation in the Marketplace game in terms of team skills and competencies by virtue of function fall into the second quadrant indicating the need to maintain the current result.

Thus, it can be concluded that in terms of team skills and competencies by virtue of their function in the company, according to players/respondents, Marketplace Simulacrum as a tool for improving skills and competencies performs very well, which is also reflected in the determined value of the CSI (Customer

Satisfaction Index), which in this area is 8.34 out of 10 possible points, which is higher than in the case of the individual shot. Such a result should be considered good. For it to be particularly good it is necessary to look at which areas could be corrected. All of those indicated received an average score of less than 0.9 so it would be worthwhile to work with each of them.

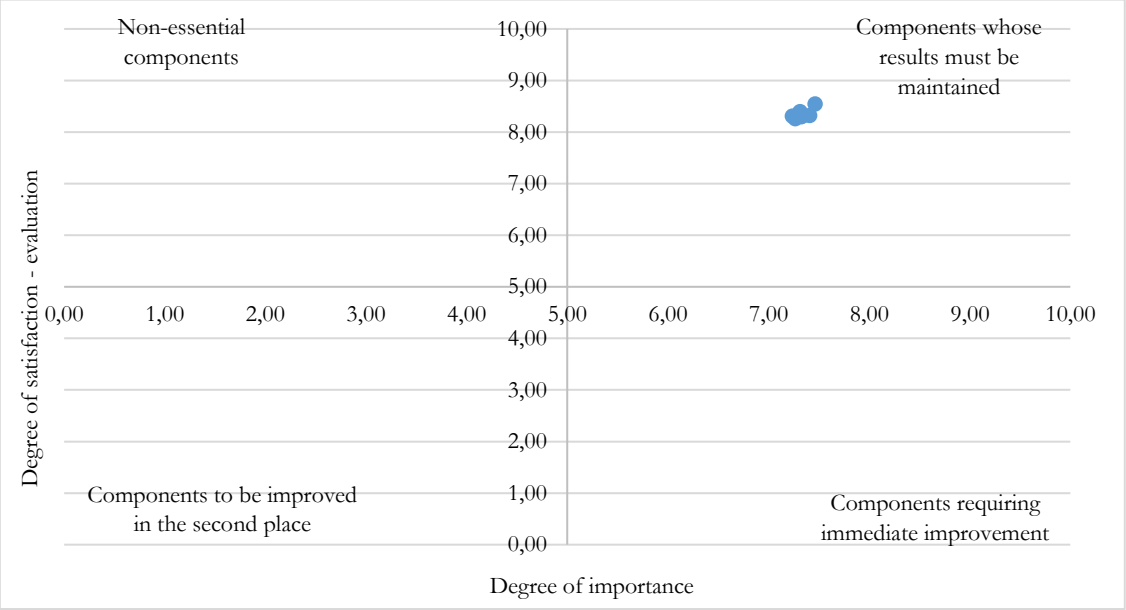

Figure 7. Map of perceptions of the importance and ratings of Marketplace simulacrum components by virtue of their function in the organization in terms of teams expressed in a weighted average (n=127).

Source: own study.

Juxtaposing the indications of skills and competencies by virtue of their function in the company in terms of the team with the assessment of the possibility of gaining experience to use in business practice in the opinion of the respondents, it was possible to verify the potential relationships between the selected variants of variables and to indicate the strength of the relationship between them (Table 4).

Table 4

Differentiating areas - the importance and evaluation of Marketplace simulation components by virtue of their function in terms of the team versus the opportunity to gain experience for use in business practice (n=127)

Response Variant	Response Variant	Response Variant	Response Variant			Response Variant		
			χ^{2a}	p^b	V^c	χ^{2a}	p^b	V^c
Leading and caring for the team	7,27	8,26	7.325	0.120	0.240	17.140	0.002	0.367
Forming responsibility for the work of the team	7,24	8,31	8.617	0.071	0.260	8.475	0.076	0.258
Ability to assign roles and tasks in the team	7,34	8,31	11.207	0.047	0.297	7.300	0.121	0.240
Ability to influence others	7,31	8,35	11.246	0.047	0.298	6.426	0.267	0.225
Inspiring others to take action	7,33	8,31	8.499	0.075	0.259	2.616	0.759	0.144
Ability to involve others in the process of achieving a goal	7,32	8,30	6.966	0.138	0.234	4.677	0.322	0.192
Building and nurturing good relationships and creating bonds within the team	7,31	8,37	5.395	0.145	0.206	5.274	0.383	0.204
Arousing and stimulating motivation for action	7,31	8,36	5.167	0.396	0.202	6.073	0.194	0.219
Taking care of the constant flow of information within the team	7,31	8,39	4.345	0.361	0.185	6.134	0.189	0.220
Supervising and controlling team members	7,41	8,32	4.024	0.403	0.178	15.254	0.004	0.347
Ability to manage crisis situations and conflicts	7,46	8,54	2.607	0.456	0.143	11.508	0.021	0.301

a χ2- test value at α=0.05 b p - asymptotic significance c Strength of relationship calculated using V-Cramer

Source: own calculations in SPSS.

Also used to summarize respondents' participation in the Marketplace business simulation was the compact Net Promoter Score (NPS), which was developed by Satmetrix and Fred F. Reichheld of Bain & Company, and described in a 2003 article, "The One Number You Need to Grow," published in the Harvard Business Review. The indicator is a measure that reflects the level of customer loyalty.

Respondents answering the question of how likely they were to recommend participation in the Marketplace simulation game to their team at the company where they work could, given a 10-point recommendation scale, indicate a selected score value reflecting the strength of their support. Four out of ten respondents (44.1.%) who assigned the highest scoring values of 9-10 are called promoters. In contrast, half of the respondents (49.6%) indicated scores in the 7-8 range, and here they can be described as neutral.

On the other hand, a small number of respondents (6.3%) indicated scores of 5-6, that is, according to the analysis methodology, they can be classified as critics of the simulation. Doing the recalculations yielded a high NPS satisfaction rate (37.8%), which means that four out of ten participants in the Marketplace simulation game would recommend it to improve their business skills and competencies.

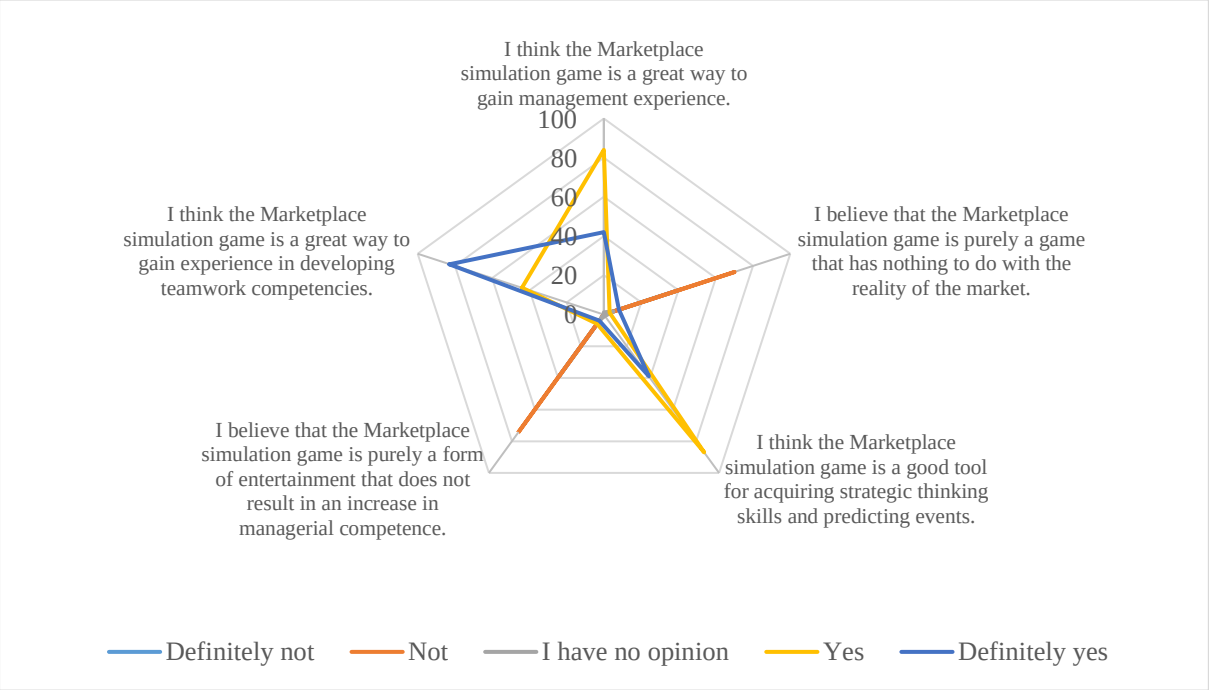

Figure 8. Indication of the materiality representation of the Marketplace simulation game for participants (n=127).

Source: own study.

This approach is confirmed by an analysis of the most frequently repeated phrases conveying the relevance of the game. No and definitely no Marketplace simulation game is not exclusively a game that has nothing to do with the reality of the market (87.40%) and is not exclusively a form of entertainment that does not result in an increase in managerial competence (89.76%). On the contrary, yes and definitely yes according to the participants of the Simulacrum Marketplace games is a good tool for acquiring strategic thinking skills and anticipating events (99.21%). It is also, according to respondents, a great way to gain management experience (99.22%) including gaining experience in developing competencies for teamwork (100.00%).

4.3. Discussion

Verifying the assumptions of hypothesis H1 by applying the $\chi 2$ test of independence based on Cramér's V coefficient, a result was obtained confirming that yes, the components and sequence of game execution (algorithm) of the Marketplace simulation influences the experience gained during the game, which the respondents who participated in the gameplay could use in business practice. This relationship also relates to the number and duration of the individual quarters, the visualization of the game, the tools and reporting capabilities of the decisions made, as well as the way the facilitator works with the simulation and the possibility of conducting the game in English. Thus, one may be tempted to conclude that the technical and operational-relational attribution of the Marketplace simulacrum can positively influence the players'

experience by strengthening their capabilities in business practice. Only in terms of the intuitiveness of the game, which would affect business practice, there is no statistically significant relationship. Such a relationship can be indicated relative to the interactivity of the game in terms of adaptation to market realities. A correlation is also apparent between the way the instructor works with the Marketplace simulacrum and the perception of the game as arousing engagement and not boring, which allows confirmation of hypothesis H2. Arousing engagement is also correlated with the ability to run the game in English. Unfortunately, there is no statistically significant relationship between the components and sequence of the game, the number and duration of individual quarters in the gameplay, the visualization of the game, its intuitiveness of the interface and the tools and reporting capabilities of the decisions made, and the state of arousal of commitment of the participants in the gameplay. In such a context, it can be concluded that the conduct of gameplay is largely dependent on the human component, i.e. the knowledge, skills and competencies of the game leader, particularly due to the fact of conducting gameplay for people who already have professional experience, and are able to use a technical tool so that the game is useful for the participants.

According to the analysis, the Marketplace simulacrum positively influence the perception of business processes by the participants of the game from a narrow area to a comprehensive view of a multinational enterprise, which helped confirm hypothesis H3. The mechanics of the business simulation activity including the multiplicity and multiplicity of decision-making relationships and their effects, indications of the importance of having knowledge in the area of international enterprise management, the importance of team management methods and the relevance of communication in team management processes were appreciated by the study participants indicating the possibility of using the experience gained during the game in business practice. According to the analysis, participation in the Marketplace simulation has a positive effect on individual and team absorption capacities in terms of management skills and competencies of the game participants supporting the process of improving the management workshop of middle and senior managers of multinational enterprises, which allows confirming hypothesis H4. Representation is provided by the results of the analysis from the weighted averages and their representation in the perceptual maps in the second quadrant indicating the necessity of maintaining such a result, which allows us to conclude that the simulation as a tool for improving management skills and competencies by managers works well meeting expectations.

Finally, it can be added that the Marketplace simulacrum is appreciated and recommended by the participants of the games of middle and senior managers as an important tool for improving management skills and competencies, which allows us to confirm hypothesis H5. This is represented by the results of the CSI indicators for improving individual competencies and skills (8.31) and CSI (8.34) for improving team competencies and skills, as well as NPS for the overall gameplay (37.8%).

CONCLUSIONS

The modern world is a socio-technological world in which it is important for managers to have adequate knowledge, skills and competencies to manage. Acquisition of area knowledge is identified with formal, university education and courses and training. The formation of skills and competencies is a process that links informal education with acquired hot knowledge derived from work experience. Simulation decision-making games oriented to support management processes in enterprises at each stage of developing a specific decision are extremely attractive in the process of improving the skills and competencies of managers. They are valued for their attractiveness based on immersion, i.e., such immersion into the world of the market game as if it were real and not just a virtual game. Making decisions in the unreal digital world makes the participants unafraid to make mistakes and allows them to test different solutions and analyze

the consequences of their decisions without suffering the consequences. Participants bring back their reflections and their conclusions. This is what makes participation in games so fascinating. Simulation games represent not only entertainment, but above all an engaging form of experiential learning, and this makes them the most forward-looking tools for education, not only for formal education, but above all for those with managerial experience. Considering the ongoing processes of virtualization and technologization, as well as the broad digital transformation, the use of interactive business simulations will be an attractive, acceptable and non-infantile method of experiential learning in the future.

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