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Gamification for staff motivation: Impact on work efficiency and corporate culture at the international level

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Abstract

Aim/purpose – This article analyzes the impact of gamification on staff motivation, performance, and corporate culture at the international level. It also examines the integration of advanced technologies such as AI (artificial intelligence), AR (augmented reality), and VR (virtual reality) into gamification strategies to enhance their effectiveness.

Design/methodology/approach – The study utilizes a semi-systematic literature review, synthesizing information from various scientific sources. This approach allows for a comprehensive analysis of gamification's impact on employee engagement and productivity, focusing on incorporating advanced technologies.

Findings – The research identified that gamification significantly enhances employee motivation and performance. It highlights the additional benefits of AI-driven personalization, AR, and VR, which create immersive and adaptive learning environments. A framework for gamification implementation in business is proposed, including six steps such as (1) define objectives, (2) analyze the audience, (3) select game elements, (4) develop a game mechanism, (5) implement and train, (6) collect feedback and adapt.

Research implications/limitations – The study's reliance on a semi-systematic literature review may not capture all practical nuances and recent advancements. Future empirical research involving direct observation within organizations is recommended. Additionally, the findings are based on theoretical analyses and case studies, which may not fully represent the diversity of real-world applications across different industries and cultural settings.

Originality/value/contribution – This research contributes to the existing literature by expanding traditional gamification models to include advanced technologies. It provides actionable insights for businesses seeking to implement gamification strategies, offering examples and recommendations for practice. The study underscores the need for strategic and context-specific implementation of gamification to ensure its effectiveness.

Keywords: gamification, staff motivation, HR management, artificial intelligence, virtual reality in working process.

JEL Classification: M12, M14, M20.

1. Introduction

In today's corporate environment, personnel management is undergoing significant changes due to rapid digital transformation and international business expansion (Sarttarova et al., 2014). The introduction of new technologies, such as AI (artificial intelligence), AR (augmented reality), and VR (virtual reality), is revolutionizing how businesses operate and manage their human resources (Mazarakis, 2021). These technological advancements necessitate innovative strategies to maintain high employee engagement and productivity levels. One such strategy gaining traction is gamification, which involves applying game elements in a working environment to stimulate and maintain high efficiency among workers

(Kuzheliev & Britchenko, 2016). Gamification, or the application of game elements in a working environment, has become increasingly crucial for enhancing worker motivation and maintaining high efficiency (Wibawa et al., 2022).

Research is also vital in the context of human rights protection. The experience of highly developed countries shows that economic growth largely depends on the effective recruitment and use of skilled workforce (Yaroshenko et al., 2022a). At the same time, the working atmosphere should be as healthy as possible. This helps increase employee motivation and overall positive performance in the company (Tsaras et al., 2018). In today's world, the development of technology greatly influences the creation of such an atmosphere. It should be noted that in the period of globalization and the development of information and communication systems, new nonstandard forms of employment appear, designed to meet the needs of modern society (Yaroshenko et al., 2021). This also applies to the introduction of new technologies in the workplace. One such example is gamification.

The concept of gamification has garnered significant attention from various fields, including business, education, and health, due to its potential to improve motivation, engagement, and goal achievement (Dorling & McCaffery, 2012). Integrating game mechanics such as points, levels, and rewards in non-game contexts has shown promising results in increasing employee engagement and productivity (Opresku et al., 2014). However, the rapid advancement of technologies like AI, AR, and VR offers new opportunities and challenges for gamification that have not been extensively explored in the current literature (Mazarakis, 2021). Recent studies have highlighted the potential of AI to personalize the gamification experience by analyzing user data and providing tailored challenges and rewards (Gamification Market Size & Share Analysis..., 2023). Furthermore, AR and VR can create immersive environments that enhance engagement and motivation, offering unique opportunities for training and development (Dichev & Dicheva, 2017).

Despite the growing body of research on gamification, there remains a gap in the literature regarding the comprehensive integration of these technologies into gamification strategies and their impact on work efficiency and corporate culture at an international level. The existing research primarily focuses on traditional gamification techniques, and there is a need for more in-depth studies on integrating advanced technologies in this context (Mazarakis, 2021). Furthermore, while gamification has been shown to improve motivation and productivity, there is limited understanding of how it can be effectively applied across different cultural contexts and industries.

Addressing these gaps is crucial for several reasons. First, understanding how advanced technologies can enhance gamification can help businesses create more engaging and effective work environments. Second, exploring the impact of gamification across different cultural contexts can provide insights into how to tailor strategies to diverse workforces, which is increasingly essential in a globalized economy. Finally, integrating AI, AR, and VR into gamification can lead to more personalized and immersive experiences, further boosting employee motivation and productivity (Mazarakis, 2021).

This article analyzes the impact of gamification, enhanced by AI, AR, and VR, on staff motivation, performance, and corporate culture at the international level. It identifies optimal strategies for using these advanced technologies to improve working conditions and engage employees.

This study aims to address the following research questions:

1. How can AI, AR, and VR be integrated into gamification strategies to enhance employee engagement and productivity?
2. How do these advanced technologies impact corporate culture and work efficiency at an international level?
3. How can gamification be tailored to different cultural contexts to maximize its effectiveness?

This research is expected to make several contributions to both theory and practice. Theoretically, it will expand the existing gamification models by incorporating advanced technologies, providing a more comprehensive framework for understanding their impact on employee engagement and productivity. Practically, the findings will not just offer, but equip businesses with actionable insights for implementing gamification strategies, helping them create more engaging and effective work environments. Additionally, the study will provide recommendations for tailoring gamification to different cultural contexts, enhancing its applicability in a globalized economy.

The paper is structured as follows: The next section provides a comprehensive literature review on gamification and its integration with AI, AR, and VR. The methodology section outlines the semi-systematic literature review approach used in this study. The findings section presents the impact of these technologies on gamification. The discussion section explores the implications of these findings, and the conclusion summarizes the key points and suggests areas for future research.

2. Theoretical background

Over time, gamification has become a research subject aimed at developing new methods and approaches. Thus, Opresku et al. (2014) defined gamification as a phenomenon and determined the features of gamified workplaces. They provided ten principles that can make work more attractive for employees and create more benefits for employers. From a psychological perspective, gamified workplaces can be viewed as self-improving and self-learning structures where behavior change is initiated and continuously maintained (Opresku et al., 2014).

Essential conclusions and examples of the practical application of gamification were provided by Sereda (2017). In her work, the researcher noted that the rapid development of information and communication technologies, the simultaneous change of generations of human resources, namely the entry into the labor market of the younger generation born in the era of personal computers, mobile phones, and other devices, causes a change in traditional motivational schemes that are incomprehensible and uninteresting to the younger generation of employees. Therefore, young companies and start-ups required some new game methods to be implemented based on software products and web applications. However, this phenomenon has emerged recently, and thus, there is a need to examine the opportunities and limitations of its use in business. In addition, the authors provide various examples of successful and ineffective gamification projects.

Furthermore, Serheieva (2014) examined the impact of gaming practices on the organization and efficiency of work. She discussed the use of game mechanics in non-game areas and noted the lack of research in this area. The author analyzed the works of foreign authors related to the use of game mechanics and provided examples of tasks that can be solved with the help of gamification. When describing the benefits of gamification, the author pointed out increased motivation and learning, improved team communication, enhanced leadership skills, reduced conflicts, and boosted productivity. Gamification also stimulates interest and encourages action using various motivational techniques.

Werbach (2012) conducted a comprehensive study of gamification principles and their application in various business contexts. His research is a seminal work in gamification, offering ideas and practical advice for businesses seeking to use game elements for strategic purposes. Werbach (2012) defined critical concepts related to gamification and explained why games are addictive from a psychological standpoint. He also emphasized that successful gamification is not only about adding points, badges, or leaderboards to a non-game context. On the contrary, it requires a deep understanding of human motivation and behavior.

The analysis of specific game mechanics and principles was provided by Zinger (2014). He concluded that gamification has become widespread in the workplace and should not be considered insignificant. Employee engagement encompasses various aspects of employees' connection to work, including their tasks, interactions with managers and leaders, connections with colleagues, and overall connection to the organization. While gamification in the workplace may seem to be a relatively new concept, it is built upon timeless principles and practices, even though the platforms and technologies have evolved significantly over time. From traditional methods such as using a chalkboard to modern, massive, multiplayer online games, gamification remains rooted in engaging workers and enhancing their overall experience in the work environment.

3. Research methodology

The primary method employed in this study was a semi-systematic literature review, following guidelines outlined by Mengist (2019). This approach was selected to ensure a comprehensive and unbiased synthesis of the existing research on gamification, its integration with AI, AR, and VR, and its impact on employee motivation, performance, and corporate culture.

Database selection: The databases searched included Web of Science, Scopus, IEEE Xplore, PubMed, and Google Scholar. These databases were chosen for their extensive coverage of academic and industry-related research across various disciplines.

Search criteria: The search used specific keywords and phrases related to the study's focus areas. The primary keywords used were "gamification," "employee motivation," "work efficiency," "corporate culture," "artificial intelligence," "augmented reality," and "virtual reality." Boolean operators such as AND, OR, and NOT were employed to refine the search results.

The inclusion criteria for the articles were as follows:

- articles published in peer-reviewed journals and conferences,
- studies focusing on the application of gamification in the workplace,
- research discussing the integration of AI, AR, and VR with gamification,
- studies conducted between 2010 and 2023 to ensure the inclusion of recent advancements in the field.

The exclusion criteria included:

- non-peer-reviewed articles, such as opinion pieces and editorials,
- studies not directly related to the workplace context.

Study selection process: An initial search yielded approximately 2,500 articles. After removing duplicates and screening the titles and abstracts for relevance, 300 articles were selected for full-text review. Each article was evaluated against the inclusion and exclusion criteria, resulting in a final selection of 150 articles deemed relevant to the study.

Data extraction and analysis: Data extraction involved systematically recording information from each selected article, including the authors, publication year, study design, sample size, key findings, and relevance to gamification and its integration with AI, AR, and VR. The analysis focused on identifying common themes, trends, and gaps in the existing research.

Time period: The literature review covered studies published from January 2010 to December 2023. This period was chosen to capture the developments in gamification and advanced technologies over the past decade.

By following this structured methodology, we aimed to provide a thorough and balanced overview of the current research on gamification and its integration with advanced technologies. The semi-systematic approach allowed us to identify significant findings, trends, and research gaps that can inform future studies and practical applications in the field.

4. Research findings

4.1. General theoretical overview of gamification

Open access to modern information technologies creates a new type of society that increases the productivity and competitiveness of any country in the global market and requires significant management changes (Mazaraki et al., 2021). In general, equality has always been at the forefront of the principles of international law and national legislation of developed countries (Yaroshenko et al., 2022b). In recent years, gamification has become an integral tool in many industries in the 21st century, and it can be used to increase motivation (Kryukova & Ameridze, 2019).

Gamification is the application of game-design elements and game principles in non-game contexts (Nazarova et al., 2021). The term was first coined in 2002 but gained widespread recognition around 2010 (Deterding et al., 2011). The primary goal of gamification is to enhance user engagement, organizational productivity, learning, employee recruitment and evaluation, and ease of use (Seaborn & Fels, 2015). In essence, gamification seeks to leverage the motivational power of games to encourage desired behaviors among employees or customers.

Sereda (2017) distinguished two types of gamification: external and internal. External gamification aims to attract consumers and potential customers and, as a result, increase brand awareness and company revenues. Internal gamification aims to improve the company's efficiency, motivating and increasing employee loyalty. According to this classification, this article is focused on internal gamification.

Gamification has become yet another confirmation of the concepts of irrational choice in behavioral economics, which in recent years has found its scientific, institutional embodiment as a separate field of economics. Thus, a person's desire to prefer a game to an actual activity is based on a deep need for competition and achievement, and public recognition of one's achievements (Oak & Bae, 2013).

Thus, gamification is based on several core principles that characterize its implementation:

1. **Setting goals and objectives:** Gamification involves clearly defined goals and objectives that direct the attention and efforts of participants. These can be challenges, achievements, levels, or special rewards that stimulate progress in the game (Luo, 2021).
2. **Rewards and recognition:** This technique uses a system of rewards and recognition to motivate participants. These include points, badges, levels, flags, or other symbols of achievement that indicate success and progress in the game (Luo, 2021).
3. **Mechanisms of competition and cooperation:** This principle can encourage competition between participants or cooperation between them. For example, leadership boards, team tasks, collective achievements, or the possibility of joint goal achievement can be used (Melnyk & Varibusova, 2019).
4. **A system of levels and achievements:** Gamification may involve a hierarchical system of levels where participants can increase their status, unlock new opportunities and challenges depending on their achievements.
5. **Individualization and personalization:** Individualized tasks, rewards, and challenges can be used to match participants' interests, skills, and needs (Girdauskiene et al., 2022). This makes gamification more adaptable to individual preferences and motivations.

Competency development is a critical aspect of human resource management. It focuses on continuously developing employees' skills and abilities to meet the evolving demands of the workplace. Traditional forms of competency development include training programs, workshops, and performance evalua-

tions. However, the integration of gamification into these practices represents a significant shift towards more engaging and effective methods of skill enhancement (Werbach & Hunter, 2012).

Gamification in competency development can be seen through implementing game elements in training programs. For example, employees can participate in interactive simulations that mimic real-world challenges, allowing them to develop and practice new skills in a risk-free environment (Landers & Landers, 2015). This approach makes learning more engaging and provides immediate feedback, which is crucial for effective learning and improvement.

Moreover, gamified competency development programs can include personalized learning paths, where employees progress through different levels based on individual skill development. This personalized approach ensures that each employee receives training that is tailored to specific needs and competencies, thereby enhancing overall effectiveness and productivity (Bellotti et al., 2013).

In summary, gamification involves using game elements and principles in non-game situations to stimulate, motivate, and engage participants in achieving certain goals. By embedding gamification into competency development, organizations can create a continuous learning and improvement culture. This approach enhances employee engagement and motivation and ensures that the workforce is equipped with the necessary skills to meet the challenges of the modern workplace.

Management uses gamification to develop and systematize its motivational policy (Ivashchenko et al., 2018). Thus, it increases the overall level of labor productivity, identifies leadership in a particular industry, determines the vector of development for each specific employee and the team as a whole, and encourages them to develop in this direction. It provides all employees with prompt feedback on performance, increases the visibility of the performance of each employee, improves the quality of communication in the team, reduces the number of conflicts, and unites employees with a common idea (Serheieva, 2014). In general, using games in staff management has proven to be an effective tool because more information is absorbed and retained during training in the form of a game, etc.

By addressing these aspects, the paper can provide a more comprehensive review of the definition and concept of gamification while embedding it within the trend of competency development forms.

4.2. Examples of gamification implementation in the world

In today's business, an important task is to attract, motivate, and retain talented employees. Motivation is a crucial factor affecting productivity and efficiency. Traditional approaches to motivation, such as financial incentives and salary increases, do not consistently achieve the expected results. Therefore, companies use gamification since it creates a gaming context where employees can interact, compete, and achieve their goals. Using gamification in the workplace has a powerful impact on staff motivation, improves engagement, and contributes to achieving high results (Abrahám et al., 2018). Accordingly, it is necessary to consider several successful examples of implementing these mechanisms in the company's activities and analyze why they show positive results.

Being one of the world leaders in the CRM market (Grand View Research, 2023), Salesforce uses gamification in its CRM system to boost sales performance. The company was founded in 1999. Today, Salesforce is not only a CRM system but a cloud platform that offers many other benefits besides the CRM part. Employees receive points and virtual rewards for achieving goals, which motivates them to work more efficiently and creates healthy competition among them.

Microsoft uses gamification in its Microsoft Teams platform (Microsoft Teams, 2024). The company introduced a system of achievements and badges given to employees for active participation in team projects, collaboration, and goal achievement. This encourages employees to collaborate, improves team dynamics, and increases motivation to succeed. Similarly, Google uses gamification to engage and motivate its staff. They created an internal Google+ platform (2024) for employees to communicate, collaborate, and provide mutual support. Within this platform, a system of badges and kudos are given to employees for achievements and contributions. This encourages employees to be actively involved and promotes a positive corporate culture.

Furthermore, the Ukrainian business group Interpipe introduced an internal currency of hedgehogs to motivate staff. The result was a 19% increase in KPIs at the corporation's pipe-rolling plant.

There are other gamification methods to interact with employees. A rapid increase in digitalization characterizes the current stage of public relations development. The scientific development and technological progress have become modern society's main characteristic features and are widely used in the labor market (Petryshyn & Hyliaka, 2021). For example, gamification is used in the process of selecting future employees. Thus, the French postal service For-

maposte launched the *Jeu Facteur Academy* project, during which players (and potential employees) could perform courier tasks for a week, forming a realistic picture of work in the company. As a result, the staff turnover rate was reduced from 25% to 8% (White, 2015). The UK's Secret Intelligence Service also applies gamification elements to selecting candidates. At the selection stage, candidates are asked to read an encrypted message on the *CanYouCrackIt.co.uk* website by cracking the code (Kunenko et al., 2022).

Apart from that, a Canadian mining company, Teck, uses gamification for staff training and development. Virtual production simulators of an excavator and a mining dump truck allow workers to practice before going to a real coal mine and work out movements and trajectories on 3D models, saving time and fuel during training. The investments in simulators were reimbursed in a year. Similarly, gamification-based training is used at Qualcomm, an American company that develops and researches wireless communications equipment. It introduced ratings and rewards for employees' activity in answering (giving advice) on the internal portal devoted to technical problems and questions. Lloyds TS Bank (2024) introduced a corporate currency called *beanz*, which is paid for innovative ideas proposed by employees on a virtual stock exchange to intensify the innovation process. Employees submitted ideas that everyone evaluated. The ideas with the highest ratings were posted on the virtual stock exchange, where they were traded. This virtual corporate currency can be exchanged for real money.

Thus, it can be noted that many well-known large companies use gamification within their business processes for different purposes, namely staff motivation, increased labor intensity, selection of potential candidates, training, and development (Rodrigues et al., 2022). Consequently, it is worth mentioning that gamification creates a more attractive and interactive working environment. Employees become more engaged and invested in tasks by introducing game elements such as challenges, rewards, and competitions. Such increased engagement leads to higher productivity and a sense of satisfaction. In addition, it provides clear goals and objectives for which employees strive. By breaking down tasks into smaller, achievable chunks, employees feel motivated to work to their best ability and strive to achieve their goals. The element of competition can further motivate employees to excel and achieve greater success. It can also be noted that gamification can be an effective tool for training and development. It creates a dynamic learning process in which employees can acquire new skills and knowledge interactively and engagingly (Sukhonos & Murach, 2020). Employees can better retain and apply information effectively by incorporating gamified training modules into training programs.

However, it is worth noting that there are also cases where gamification has a negative effect. For example, although the innovation process in Lloyds TS Bank (2024) significantly intensified, this approach also caused hyperinflation of the beanz currency and the emergence of insider trading. However, such an outcome demonstrates the insufficiently developed mechanics of its implementation rather than the negative impact of gamification on productivity.

There were also examples when such a progressive approach had a negative impact on the labor process. For example, in 2010, Google decided to celebrate the 30th anniversary of the Pac-Man game and embed the browser version of the game in the logo on the Google home page. According to Zinger (2014), 4.8 million hours of employees' working time worldwide were spent on this game, resulting in a global loss of productivity of \$120 million. Nevertheless, this negative result indicates the involvement of employees worldwide in the game rather than in the specific company.

Indeed, if gamification in the workplace is not well-organized and well-developed, it can distract employees from performing core tasks. Too many game elements or competitions can lead to employees focusing on the game rather than essential business tasks (Vornhagen et al., 2020). However, the problem lies not in gamification itself but in its implementation. Properly designed gamification strategies should ensure that game elements align with business goals and employee tasks to prevent such issues.

There are a number of reasons why gamification projects fail to produce proper results, including forcing employees to play, giving out rewards for little effort, the relationship between game results and employees' career prospects, etc. In addition, many problems of failed gamification projects are also related to poor design, ill-conceived conditions, and the lack of tangible rewards for winners. Sereda (2017) also noted that the main feature of any game is its temporality. The game can become dull if nothing changes and the winners remain the same. In addition, the very concept of a game is associated with the possibility of temporary immersion in another reality, which can be interrupted at any time.

Based on the above examples, it is evident that gamification, when correctly implemented, can significantly enhance employee motivation, engagement, and productivity. It is essential to design gamification strategies thoughtfully, considering the specific needs and contexts of the organization. The successful implementations demonstrate that gamification can transform the workplace by creating a more interactive and engaging environment, setting clear goals and objectives, and fostering a culture of continuous improvement.

4.3. Steps and methods that can be used in gamification implementation

Modern non-financial motivation methods to increase the employees' efficiency through primary incentives are as follows: ratings, badges, awards, and bonuses for completing tasks or taking the next training course. Gamification methods include achievements, ratings, leaderboards, quests, bonus programs, and competitions. Such methods have a positive impact on employee engagement. These rewards displayed before other participants can represent completed collective or individual game activities. The methodology is usually simple: achievements are initially closed and opened upon a particular stage's completion (Golubnycha, 2022). They can differ in the degree of complexity and unexpectedness. Rewards based on the results of a number of specified tests, specific tasks, the simultaneous implementation of several functions, and the completion of mandatory game activities increase the motivation and interest of employees.

Ratings and leaderboards are another essential method of gaming practice in the workplace. Gamification based on the competition can be applied if a particular task indicates its achievement or distance from the goal. For example, a simple competition is held within the sales department: the salesperson who concludes the most significant number of deals (goal – sales, metric – sales volume) during the month becomes the leader (Latysheva et al., 2020). Non-financial motivation is also efficient, in the form of a table with a rating and a list of leaders for the week/month tasks,. However, it is also worth emphasizing that ratings are a popular game mechanic, but they are not always practical. There is always a danger of getting negative feedback from participants. Employees who occupy the bottom positions in the rankings are not motivated to improve their results because it seems impossible for them to rise to the top. At the same time, the leaders may be afraid of losing their positions. In addition, quest mats have low effectiveness because they seem not to involve real competition but a collective journey with obstacles (Jacob et al., 2022).

Companies can give employees bonuses that can be redeemed for rewards to increase employee loyalty and build a strong brand. Therefore, employees show a higher level of motivation and engagement. Finally, competitions demonstrate positive outcomes because teamwork promotes cooperation between employees who move in the same direction, compete, and receive gifts or other incentives (Rodzinskyi & Savchenko, 2020).

To effectively implement gaming practices in business, building a clear structure and developing concrete steps is necessary. First, it is advisable to formulate goals to be achieved through gamification. These can be boosted motiva-

tion, increased productivity, improved skills, etc. Introducing a game for the sake of a game is a wrong approach and may eventually lead to adverse results.

The next important step in developing a gamified system is to analyze the audience, i.e., the employees engaged in specific business processes. It involves studying and understanding the main characteristics and needs of the target audience for which the gamified system is being created. Studying the motivational factors and values of the audience will help understand what stimulates and motivates them (Zhang & Yu, 2022). For example, some people value challenges and competition more, while others value a sense of community and collaboration. Studying the needs and desires of the audience allows us to determine how a gamified system can meet their needs. For instance, the managers can incorporate social elements into the gamified system if the audience wants more interaction and collaboration. It is crucial to consider the preferences and limitations of the audience when implementing gamification. In particular, if the audience does not have access to computers or has no experience with technology, more superficial forms of gamification, such as physical games or visuals, can be used.

The next step is to select game elements. Depending on the goals and the audience, choosing the correct game elements, such as leaderboards, achievements, rewards, levels, challenges, etc. is necessary. These elements create incentives for participants and increase their motivation. It is essential to balance the choice of game elements to keep employees motivated, interested, and engaged.

A key aspect of gamification is the development of game mechanics, which includes rules, tasks, rewards, and interaction. This helps create an engaging and meaningful gamified system. At this step, the specific goals that participants need to achieve are determined, and tasks are created to help them achieve them. The tasks should be clear, challenging, and achievable to motivate participants. It is also critical to establish rules that govern the process and interaction of participants with the gamified system. The rules should be clear and straightforward to ensure fair play and avoid conflicts. At the same step, the reward is determined (Belkin et al., 2022).

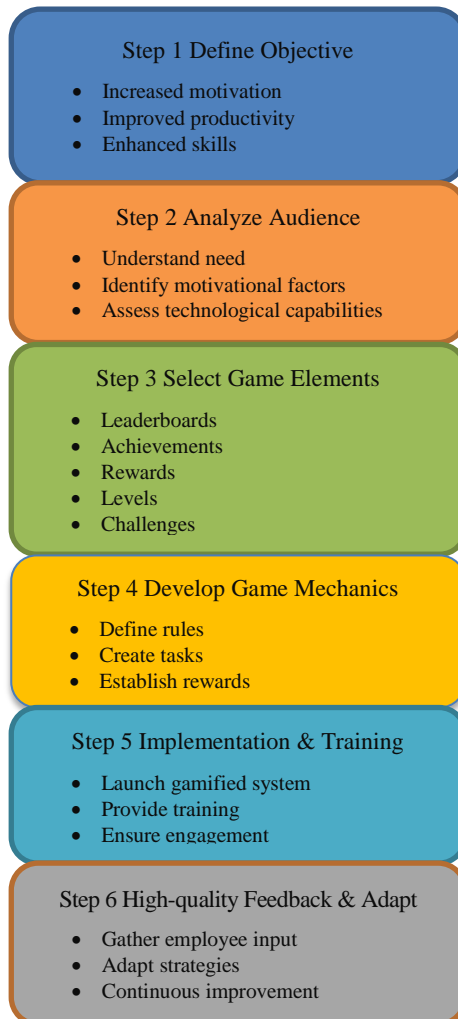
The next step of gamification is implementation and training. Once the gamified system is developed, it is vital to ensure it is successfully implemented and trained. The focus of the gamified system should be on the psychosocial experience and well-being of the employees (Gomes et al., 2012). Accordingly, it is noteworthy that adults have a greater need to document their memories, connections, and reactions so they can become co-creators of the gamified workplace with the help of modern technologies (Barthel, 2013). This can be particularly powerful for the development of social capital. In addition, gamification can con-

tribute to the well-being of employees and management. For example, games can be used in an enterprise to train managers who can make decisions and determine consequences through simulations and role-playing (Kark, 2011).

A component of effective gamification is high-quality feedback. It allows the participants to feel confident and understand their current step or level. As a rule, a gamified system provides the result immediately after the end of the game (Sahan, 2022).

Figure 1 summarizes the steps to implement gamification, including detailed non-financial motivation methods.

Figure 1. A framework for gamification implementation



The essence of creating gamified systems is to consider the specific characteristics of the company and its personnel because gamification should aim to promote motivation and improve corporate culture. Before implementing it, it is essential to understand the specifics of the company, its goals, and personnel needs. Another vital aspect that should be considered is the readiness of managers to collect feedback from the staff regarding the implementation of gamification and the readiness to adapt strategies according to the obtained results and needs.

5. Discussion

Understanding the optimal use of gamification in the workplace to change workers' behavior positively is still in its early stages. The analysis of research across various industries confirms the potential of gamification as a promising strategy for increasing loyalty, productivity, and well-being in the workplace. However, there are still many unresolved issues, such as the practicality and ease of measuring the value of a gamified working environment for personal and organizational well-being. Furthermore, it is also essential to revisit the underlying concepts associated with workplaces to implement positive change.

It is worth noting that gamification primarily affects employees on a subconscious level. To do this, it is necessary to pay attention to the psychological aspect of this practice. To determine why gamification is gaining popularity, the experience of computer games that have spread worldwide should be analyzed. First, they provide well-known motivation methods: strengthening self-esteem through recognition by peers or co-players. Numerous studies show positive dynamics of any activity in the presence of such motivational incentives as points, rewards, encouragement, the desire to gain status, to be part of an inclusive social community, the ability to manage a group, etc. Similarly to computer games, an employee is rewarded for completing a particular task to get a place on the leaderboard, which encourages further improvement. Thus, gamification technologies aim to create platforms with a high level of engagement (Sahan, 2022).

The feeling of euphoria from a result or an achievement arises from the release of endorphins, which imbues the gamer with the strength to complete all the challenges and get a reward. Game developers use this feature because they know that the player wants to be challenged, and without a challenge, achievements are devalued. Thus, accessible training and straightforward tasks give a feeling that everything has been achieved. In games, this is realized by moving to a new level.

However, it is worth emphasizing that gamification differs from gaming technologies, scientifically proven and widely used in various industries. The absolute novelty of gamification is the digitalization of motivation. Digital content gives modern users the feeling of a computer game. Moreover, gaming technologies motivate users to play and attract a broad audience with low material costs. In contrast, gamification is a strategy that uses game mechanics and rewards to motivate users to complete tasks, including educational ones (Dichev & Dicheva, 2017).

Furthermore, gamification has been implemented in many companies. Therefore, the main trends in gamification should be considered. First of all, the role of AI in the modern world is actively increasing (Mazarakis, 2021). We believe that this trend will be reflected in gamification. AI is used to create personalized and adaptive gamified systems. Moreover, it helps analyze and interpret data on the behavior of participants, which allows us to understand their preferences, skills, and abilities and adapt game mechanics to each participant's needs and skills. Based on this data, individual recommendations, tasks, or rewards can be provided for each participant. AI can consider the level of difficulty, type of tasks, rewards, and other factors to create an optimal game experience for each participant.

The second trend is that gamification will facilitate recruitment and training programs. The COVID-19 pandemic forced companies to switch to online recruitment and training solutions entirely. Creating flexible and attractive programs for remote teams has become acute. Thus, businesses will continue to use gamified solutions to address these challenges. Moreover, gamified eLearning modules help employees understand new processes and working modes. Teams receive real-time feedback on learning progress through game components such as levels and scorecards. As a result, more than 54% of newly hired employees report higher productivity after completing a game-based training program (Gamification Market Size & Share Analysis..., 2023).

AI has the potential to revolutionize gamification by providing personalized and adaptive experiences. AI algorithms can analyze employee behavior and performance data to tailor gamification elements to individual needs. For instance, AI can recommend specific challenges or rewards based on an employee's progress, learning style, and preferences (Mazarakis, 2021). This personalization increases engagement and effectiveness by ensuring that the gamified tasks are neither too easy nor too difficult for the user.

Moreover, AI can facilitate real-time feedback and support. Intelligent chatbots and virtual assistants can provide instant responses to employees' queries, offer guidance, and even simulate scenarios for training purposes. This continuous support helps maintain high levels of motivation and reduces the likelihood of disengagement (Bajaj & Sharma, 2018).

For instance, USA-based company Salesforce has integrated AI into its gamification strategies to enhance its CRM platform. AI-driven insights help sales teams identify the most promising leads and tailor their approaches accordingly, improving performance and engagement (Kingdom Valor Solutions, 2023).

In our opinion, another emerging trend is VR and AR. In gamification, these technologies create immersive and engaging gaming experiences. VR allows participants to fully immerse themselves in a virtual game environment, creating a sense of presence through a realistic virtual space, objects, and characters. VR also facilitates interaction with the gameplay in a virtual space using body movements, gestures, or controllers, thus creating a more natural gaming experience. AR allows the addition of virtual objects and effects to the real world, which can be used in workplace gamification. Participants can see virtual objects, tasks, or information overlapping with the real environment through mobile devices or AR glasses.

AR and VR offer immersive experiences that can transform traditional training and development programs. These technologies create realistic simulations that allow employees to practice and hone their skills in a safe, controlled environment. This is particularly valuable for complex or high-risk tasks where practical experience is crucial but difficult to obtain (Perryer et al., 2016).

AR can overlay digital information onto the physical world, enhancing the learning experience by providing real-time, context-specific data. For example, an AR application can guide a technician through a repair process by displaying step-by-step instructions and highlighting relevant components (Dichev & Dicheva, 2017).

VR creates fully immersive environments where employees can engage in virtual simulations of real-world scenarios. This can include anything from customer service interactions to operating heavy machinery. VR training modules can track performance and provide detailed analytics, helping managers identify areas for improvement.

Virtual or augmented reality can be used to create immersive training modules that help staff learn new skills or procedures. This can be especially useful for complex or dangerous tasks. These technologies can facilitate organizing

virtual team-building events or excursions that help increase employee cooperation and team spirit. VR and AR can be applied to create monitoring and analytics systems that help managers assess staff response to gamified programs and make timely adjustments. Finally, using VR and AR in gamification can improve staff motivation, engagement, and productivity by creating an immersive and engaging work environment.

As gamification becomes more prevalent globally, it is crucial to consider cultural differences that may impact its effectiveness. Different cultures have varying attitudes towards competition, collaboration, and rewards, which can influence how gamification strategies are perceived and engaged with (Girdauskiene et al., 2022).

A gamification strategy that emphasizes individual achievement and competition may be well-received in cultures that value individualism, such as the United States. In contrast, in collectivist cultures like Japan, strategies that focus on team collaboration and group rewards may be more effective (Mazarakis, 2021).

To successfully implement gamification across different cultural contexts, it is essential to tailor the game elements to align with local values and preferences. This may involve adjusting the types of rewards offered, the nature of the challenges, and the overall structure of the gamified experience.

Integrating AI, AR, and VR into gamification will likely continue evolving, offering new opportunities and challenges. Future trends may include using biometric data to personalize gamification experiences further, incorporating gamification into remote and hybrid work models, and developing more sophisticated AI-driven gamification platforms:

1. **Biometric data:** Using biometric data such as heart rate and eye movement can provide deeper insights into employee engagement and stress levels. These data can be used to adjust gamification elements in real time, ensuring that the experience remains engaging and supportive (Bajaj & Sharma, 2018).
2. **Remote and hybrid work:** As remote and hybrid work models become more prevalent, gamification can help maintain engagement and collaboration among dispersed teams. Virtual team-building activities and remote training modules enhanced by AR and VR can bridge the gap between physical and digital workspaces (Alsaad & Durugbo, 2021).
3. **Sophisticated AI Platforms:** Advanced AI platforms can integrate various data sources to provide a holistic view of employee performance and engagement. These platforms can offer predictive analytics, identifying poten-

tial disengagement before it occurs and recommending proactive measures to address it (Mazarakis, 2021).

Organizations can create more engaging, personalized, and effective work environments by incorporating cutting-edge technologies like AI, AR, and VR into gamification strategies. These technologies offer new ways to enhance employee motivation, performance, and corporate culture, addressing traditional gamification approaches' limitations. Future research is crucial to explore these opportunities, focusing on effectively integrating these technologies into diverse cultural contexts and industry settings.

6. Conclusions

The presented study significantly contributes to the existing literature on gamification by demonstrating its multifaceted impact on staff motivation, work efficiency, and corporate culture at the international level.

First, existing literature emphasizes that gamification enhances employee motivation through game design elements like reward systems, rankings, and achievements (Edmonds, 2011). This study identifies that gamification, enhanced by advanced technologies such as AI, AR, and VR, can effectively boost workers' engagement and productivity. By exploring the integration of these technologies, the research provides a more comprehensive framework for understanding their impact. Second, existing literature described some issues of gamification implementation to improve staff motivation, work efficiency, and corporate culture (Kark, 2011). This study proposes a comprehensive framework for gamification implementation in the business, including six steps: (1) define objectives, (2) analyze the audience, (3) select game elements, (4) develop a game mechanism, (5) implementation and training, (6) collect feedback and adapt.

The study will be helpful for managers at all levels and those interested in personnel management, organizational behavior, and innovative methods of stimulating employees. Gamification is essential for modern business for several reasons, as presented in this study. It helps increase employee motivation, improve engagement in work processes and teamwork, engage the younger generation, and improve efficiency and productivity. Additionally, gamification reduces stress, increases job satisfaction, improves corporate culture, and helps attract and retain talented employees. Using game mechanics in the working environment can create a stimulating, engaging, and productive atmosphere that contributes to the success of an enterprise. Practical examples include using gami-

fied platforms for CRM, as seen with Salesforce, or implementing virtual training modules similar to those used by Teck. These applications illustrate how gamification can be tailored to various business needs, enhancing both internal processes and external customer engagement. While gamification has proven to be a powerful tool for enhancing employee motivation and corporate culture, its implementation must be strategic and context-specific.

The study acknowledges several limitations. First, the research predominantly relies on a semi-systematic literature review, which may not capture all practical nuances and recent advancements in the field. Second, the study's findings are primarily based on theoretical and case study analyses, which might not fully represent the diversity of real-world applications across different industries and cultural settings.

Future research should explore several new areas to build on the theoretical perspectives provided in this study. Gamification software needs to be improved to enhance its adaptability and personalization capabilities. Research should focus on developing more sophisticated AI algorithms to analyze real-time biometric data to tailor gamified experiences to individual employee needs. Further studies should investigate the long-term stability and duration of gamification-induced positive changes. This includes assessing the sustainability of increased motivation and productivity over extended periods and identifying factors that contribute to lasting benefits. Sector-specific research is necessary to identify unique requirements and challenges within different industries. For example, gamification in healthcare, education, and financial services may require specialized approaches to address industry-specific needs and regulatory considerations. Future research should also analyze the interaction and conflict resolution in gamified working environments. Understanding how gamification affects team dynamics, communication, and conflict management can provide deeper insights into creating harmonious and productive workplaces. Future empirical studies involving direct observation and data collection within organizations would provide more concrete evidence of the impact of gamification.

Disclosure statement

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References

- Abrahám, J., Britchenko, I., Jankovic, M., & Garškaite-Milvydiene, K. (2018). Energy security issues in contemporary Europe. *Journal of Security and Sustainability Issues*, 7(3), 387-398. <https://philpapers.org/archive/ABRESI.pdf>
- Alsaad, F., & Durugbo, C. M. (2021). Gamification-as-innovation: A review. *International Journal of Innovation and Technology Management*, 18(05), 2130002. <https://doi.org/10.1142/S0219877021300020>
- Bajaj, R., & Sharma, V. (2018). Smart education with artificial intelligence based determination of learning styles. *Procedia Computer Science*, 132(2), 834-842. <https://doi.org/10.1016/j.procs.2018.05.095>
- Barthel, M. L. (2013). President for a day: Video games as youth civic education. *Information, Communication & Society*, 16, 28-42. <https://www.academia.edu/6034388>
- Belkin, L., Iurynets, Ju., Sopilko, I., & Belkin, M. (2022). Culture and the use of information understanding in the field of national security (a case study of Ukraine). *Journal of International Legal Communication*, 5(2), 36-58. <https://doi.org/10.32612/uw.27201643.2022.5.pp.36-58>
- Bellotti, F., Kapralos, B., Lee, K., Moreno-Ger, P., & Berta, R. (2013). Assessment in and of serious games: An overview. *Advances in Human-Computer Interaction*, 136864, <https://doi.org/10.1155/2013/136864>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining “gamification.” *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9-15. <https://doi.org/10.1145/2181037.2181040>
- Dichev, C., & Dicheva, D. (2017). Gamifying education: What is known, what is believed and what remains uncertain: A critical review. *International Journal of Educational Technology in Higher Education*, 14(1), 9. <https://doi.org/10.1186/s41239-017-0042-5>
- Dorling, A., & McCaffery, F. (2012). The gamification of SPICE. *Software Process Improvement and Capability Determination*, 290, 295-301. https://doi.org/10.1007/978-3-642-30439-2_35
- Edmonds, S. (2011). Gamification of learning. *Training & Development in Australia*, 38(6), 20-23. <https://search.informit.org/doi/epdf/10.3316/informit.247435467542648>
- Gamification Market Size & Share Analysis – Growth Trends & Forecasts (2023-2028). (2023). Retrieved August 20, 2023 from <https://www.mordorintelligence.com/industry-reports/gamification-market>
- Girdauskiene, L., Ausrine Ciplyte, E., & Navickas, V. (2022). Gamification as an innovative instrument for employee engagement. *Marketing and Management of Innovations*, 13(1), 10-17. https://mmi.sumdu.edu.ua/wp-content/uploads/mmi/volume-13-issue-1/A551-2021_Girdauskiene%20et%20al.pdf

- Golubnycha, G. (2022). The potential of interactive infographics: Gamification and edutainment. *Scientific Collection «InterConf+»*, 26(129), 381-392. <https://doi.org/10.51582/interconf.19-20.10.2022.041>
- Gomes, N., Merugu, D., O'Brien, G., Mandayam, C., Yue, J. S., & Atikoglu, B. (2012). Steptacular: An incentive mechanism for promoting wellness. In *Communication Systems and Networks (COMSNETS), 2012 Fourth International Conference* (pp. 1-6). IEEE. <https://ieeexplore.ieee.org/document/6151377>
- Google+ platform. (2024). <https://googleblog.blogspot.com/2011/06/introducing-google-project-real-life.html>
- Grand View Research. (2023). *Customer relationship management market size, share, & trends analysis report, by component, by solution, by deployment, by enterprise size, by end use, and segment forecasts, 2024-2030*. <https://www.grandviewresearch.com/industry-analysis/customer-relationship-management-crm-market>
- Ivashchenko, A., Polishchuk, Y., & Britchenko, I. (2018). Implementation of ICO European best practices by SMEs. *Economic Annals-XXI*, 169(1-2), 67-71. <https://doi.org/10.21003/ea.V169-13>
- Jacob, A., Faatz, A., Knüppe, L., & Teuteberg, F. (2022). Understanding the effectiveness of gamification in an industrial work process: An experimental approach. *Business Process Management Journal*, 28(3), 784-806. <https://doi.org/10.1108/BPMJ-08-2021-0564>
- Kark, R. (2011). Games managers play: Play as a form of leadership development. *Academy of Management Learning and Education*, 10(3), 507-527. <https://doi.org/10.5465/amle.2010.0048>
- Kingdom Valor Solutions. (2023). *Strategically integrating salesforce and AI for enhanced CRM strategies*. <https://kingdomvalorsolutions.com/artificial-intelligence/strategically-integrating-salesforce-and-ai-for-enhanced-crm-strategies/>
- Kryukova, Ye., & Ameridze, O. (2019). Heymifikatsiya navchannya [Gamification of learning]. *Pedahohika formuvannya tvorchoyi osobystosti u vyshchii i zahal'noosvitniy shkolakh*, 67, 51-55. <https://doi.org/10.32840/1992-5786.2019.67-2.10>
- Kunenko, I., Poliarush-Safronenko, S. O., & Lapka, O. (2022). The concept and significance of constitutional and organic laws in legal science and legislation of different countries. *Journal of International Legal Communication*, 4(1), 65-74. <https://doi.org/10.32612/uw.27201643.2022.1.pp.65-74>
- Kuzheliev, M., & Britchenko, I. (2016). Theoretical and methodological aspects of formation of corporate control system in Ukraine. *Economic Studies Journal*, 25(2), 3-28. <https://ideas.repec.org/a/bas/econst/y2016i2p3-28.html>
- Landers, R., & Landers, A. K. (2015). An empirical test of the theory of gamified learning: The effect of leaderboards on time-on-task and academic performance. *Simulation & Gaming*, 45(6), 769-785. <https://doi.org/10.1177/1046878114563662>

- Latysheva, O., Rovenska, V., Smyrnova, I., Nitsenko, V., Balezentis, T., & Streimikiene, D. (2020). Management of the sustainable development of machine-building enterprises: A sustainable development space approach. *Journal of Enterprise Information Management*, 34(1), 328-342. <https://doi.org/10.1108/JEIM-12-2019-0419>
- Lloyds TS Bank. (2024). <https://www.lloydsbank.com/>
- Luo, Z. (2021). Educational gamification from 1995 to 2020: A bibliometric analysis. *ICDEL 2021: 2021 the 6th International Conference on Distance Education and Learning*, 140-145. <https://doi.org/10.1145/3474995.3475740>
- Mazarakis, A. (2021). Gamification reloaded: Current and future trends in gamification science. *i-com*, 20(3), 279-294. <https://doi.org/10.1515/icom-2021-0025>
- Mengist, W., Soromess, T., & Legese, G. (2019). Method for conducting systematic literature review and meta-analysis for environmental science research. *MethodsX*, 7, 100777. <https://doi.org/10.1016/j.mex.2019.100777>
- Microsoft Teams. (2024). <https://www.microsoft.com/en-us/microsoft-teams/group-chat-software>
- Nazarova, K., Bezverkhyi, K., Hordoplov, V., Melnyk, T., & Poddubna, N. (2021). Analiz ryzykiv diyal'nosti kompaniy na osnovi nefinansovykh i finansovykh zvitiv [Risk analysis of companies' activities on the basis of non-financial and financial statements. *Agricultural and Resource Economics: International Scientific E-Journal*, 7(4), 180-199. <https://doi.org/10.51599/are.2021.07.04.10>
- Oak, J., & Bae, J. (2013). Smart multi-platform-based CPR game app design. *Advanced Science and Technology Letters (Games and Graphics 2013)*, 39, 20-23. https://web.archive.org/web/2018060122239id_/http://onlinepresent.org/proceedings/vol39_2013/4.pdf
- Opresku, F., Jones, C., & Katsikitis, M. (2014). I play at work – ten principles for transforming work processes through gamification. *Frontiers in Psychology*, 5, 1-5. <https://doi.org/10.3389/fpsyg.2014.00014>
- Perryer, C., Celestine, N. A., Scott-Ladd, B., & Leighton, C. (2016). Enhancing workplace motivation through gamification: Transferrable lessons from pedagogy. *The International Journal of Management Education*, 14(3), 327-335. <https://doi.org/10.1016/j.ijme.2016.07.001>
- Petryshyn, O. V., & Hyliaka, O. S. (2021). Human rights in the digital age: Challenges, threats and prospects. *Journal of the National Academy of Legal Sciences of Ukraine*, 28(1), 15-23. [https://doi.org/10.37635/jnalsu.28\(1\).2021.15-23](https://doi.org/10.37635/jnalsu.28(1).2021.15-23)
- Rodrigues, L., Dwan Pereira, F. D., Toda, A. M., Palomino, P. T., Pessoa, M., Silva Galvão Carvalho, L., Fernandes, D., Oliveira, E. H. T., Cristea, A. I., & Isotani, S. (2022). Gamification suffers from the novelty effect but benefits from the familiarization effect: Findings from a longitudinal study. *International Journal of Educational Technology in Higher Education*, 19(1), 13. <https://doi.org/10.1186/s41239-021-00314-6>

- Rodzinskiy N. I., & Savchenko, D. S. (2020). Hromads'ka dumka yak instytut bezposeredn'oyi demokrati [Public opinion as institute of direct democracy]. *Pravovi horyzonty/Legal Horizons*, 21(34), 15-19. <https://doi.org/10.21272/legalhorizons.2020.i21.p15>
- Sahan, O. W. (2022). Heymifikatsiya yak suchasnyy osvritniy trend [Gamification as a modern educational trend]. *Zbirnyk naukovykh prats' „Pedahohichni nauky”*, 100, 12-18. <https://doi.org/10.32999/ksu2413-1865/2022-100-2>
- Sarttarova, L. T., Gilisbaeva, R. O., Mokeeva, N. S., & Hayes, S. G. (August, 2014). Marketing research of women costume consumers of the Republic of Kazakhstan of different price segments. *Advances in Environmental Biology*, 207+. <https://link.gale.com/apps/doc/A385070644/AONE?u=anon~7d9dfbdc&sid=googleScholar&xid=ea5cccb2>
- Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14-31. <https://doi.org/10.1016/j.ijhcs.2014.09.006>
- Sereda, G. (2017). The gamification in personnel management: Foreign and Ukrainian experience. *Economics and Management Organization*, 4(28), 216-223.
- Serheieva, L. (2014). Heymifikatsiya: Ihrovi mekhaniky dlya motyvatsiyi personal [Gamification: Game mechanics for staff motivation]. *Theory and Methods of Education Management*, 2(14). [https://lib.iitta.gov.ua/6072/1/%D0%B3%D0%B5%D0%B9%D0%BC%D0%B8%D1%84%E2%94%82%D0%BA%D0%B0%D1%86%E2%94%82%D1%8F_\(1\).pdf](https://lib.iitta.gov.ua/6072/1/%D0%B3%D0%B5%D0%B9%D0%BC%D0%B8%D1%84%E2%94%82%D0%BA%D0%B0%D1%86%E2%94%82%D1%8F_(1).pdf)
- Sukhonos, V. V., & Murach, D. V. (2020). Proekt „novoyi lyudyny” v radyans'komu soyuzi: istoryko-pravovyy aspekt [“New man” project in the Soviet Union: Historical and legal aspect]. *Pravovi horyzonty/Legal Horizons*, 24(37), 7-15. <https://www.doi.org/10.21272/legalhorizons.2020.i24.p7>
- Tsaras, K., Papathanasiou, I. V., Vus, V., Panagiotopoulou, A., Katsou, M. A., Kelesi, M., & Fradelos, E. C. (2018). Predicting factors of depression and anxiety in mental health nurses: A quantitative cross-sectional study. *Medical Archives (Sarajevo, Bosnia and Herzegovina)*, 72(1), 62-67. <https://doi.org/10.5455/medarh.2017.72.62-67>
- Vornhagen, J. B., Tyack, A., & Mekler, E. D. (2020). Statistical significance testing at chi play: Challenges and opportunities for more transparency. *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*, pp. 4-1. <https://doi.org/10.1145/3410404.3414229>
- Werbach, K., & Hunter, D. (2012). *For the win: How game thinking can revolutionize your business*. Wharton Digital Press.
- White, C. (2015). *5 companies that are successfully using gamification for recruiting*. <https://www.linkedin.com/business/talent/blog/talent-strategy/companies-successfully-using-gamification-for-recruiting>
- Wibawa, V. S., Sudarsono, Istislam, & Hadiyantina, S. (2022). The prudence of administrative judges in the digital evidence in the era of applying e-government. Information technology. *Journal of International Legal Communication*, 7(4), 23-29. <https://doi.org/10.32612/uw.27201643.2022.7.pp.23-29>

-
- Yaroshenko, O. M., Anisimova, H. V., Koliesnik, T. V., Kaplina, H. A., & Babych, N. O. (2022a). National strategy for a barrier-free environment: Problems, tolerance and implementation. *International Social Work*, 67(1). <https://doi.org/10.1177/00208728221126002>
- Yaroshenko, O. M., Harashchuk, V. M., Moskalenko, O. V., Melnychuk, N. O., & Burniagina, Y. M. (2022b). COVID-19, the global financial crisis, and the regulation of labor migration. *International Journal of Legal Information*, 50(3), 121-132. <https://doi.org/10.1017/jli.2022.35>
- Yaroshenko, O. M., Sirokha, D. I., Velychko, L. Y., Kotova, L. V., & Sobchenko, V. V. (2021). Current problems of legal regulation of remote work in the context of the introduction of restrictive measures caused by the spread of COVID-19 in Ukraine and the EU. *Relacoes Internacionais no Mundo Atual*, 1(33), 1-16. <https://revista.unicuritiba.edu.br/index.php/RIMA/article/view/5575/371373653>
- Zhang, K., & Yu, Z. (2022). Effects of gamification on learning outcomes, satisfaction, engagement, and motivation in virtual learning environments between 2020 and 2022. *International Journal of Online Pedagogy and Course Design*, 12(1). <https://doi.org/10.4018/IJOPCD.306684>
- Zinger, D. (2014). *Game on: A primer on gamification for managers*. <https://www.td.org/magazines/td-magazine/game-on-a-primer-on-gamification-for-managers>