

MASTERS
Management and Industrial Strategy

MASTER'S FINAL WORK
Dissertation

**THE IMPACT OF GAMIFICATION ON LEARNER
SATISFACTION AND CONTINUANCE INTENTION IN
ONLINE PROFESSIONAL TRAINING**

Aleksandra Iakimova

June - 2026

MASTERS

Management and Industrial Strategy

MASTER'S FINAL WORK

Dissertation

**THE IMPACT OF GAMIFICATION ON LEARNER
SATISFACTION AND CONTINUANCE INTENTION IN
ONLINE PROFESSIONAL TRAINING**

Aleksandra Iakimova

Supervision:

Prof. Joanna Katarzyna Krywalska Da Silveira Santiago

June - 2026

ABBREVIATIONS

CI – Continuance Intention,

COVID-19 – Coronavirus Disease 2019

ECT – Expectation Confirmation Theory

EdTech – Educational Technology

HTMT – Heterotrait-monotrait ratio

NFI – Normed Fit Index

PCA – Principal Component Analysis

PEOU – Perceived Ease of Use

PLS-SEM – Partial Least Squares Structural Equation Modeling

PU – Perceived Usefulness

SRMR – Standardized Root Mean Square Residual

TAM – Technology Acceptance Model

VIF – Variance Inflation Factor

ABSTRACT

This dissertation examines the impact of gamification on satisfaction and willingness to continue learning in the context of online professional development aimed at career advancement. Gamification is examined not through the lens of specific game mechanics, but through emotional and practical components such as personalization, social engagement, practical application, and achievement of results. The study analyzes how these aspects are perceived by learners and how they influence their satisfaction and desire to continue learning.

A quantitative survey was used to collect data for the study. The survey targeted adult learners and students with experience in online professional training. A total of 244 responses were received, of which 228 were deemed relevant and used for further analysis. Structural equation modeling using the partial least squares method (PLS-SEM) was applied to process the data, allowing for the evaluation of both the measurement and structural models.

The findings may be useful for companies developing online courses or implementing training programs for employees, as they enable more effective use of gamification elements to increase learner engagement, satisfaction, and motivation.

Furthermore, the study contributes to the scientific understanding of factors influencing the adoption of online learning and deepens our understanding of the role of gamification in shaping the user experience in an educational environment.

Key Words: online education, gamification, personalization, social engagement, practical application, achievement, student satisfaction, continuance intention, motivation.

RESUMO

Esta dissertação analisa o impacto da gamificação na satisfação e na intenção de continuar a aprendizagem no contexto do ensino online orientado para o desenvolvimento profissional e progressão na carreira. A gamificação é abordada não apenas através de mecânicas específicas de jogo, mas também por meio de componentes emocionais e práticos, como a personalização, o envolvimento social, a aplicação prática e a obtenção de resultados. O estudo examina de que forma estes aspetos são percebidos pelos utilizadores e como influenciam a sua satisfação e a sua intenção de continuar a aprendizagem.

Para a recolha de dados, foi utilizado um inquérito quantitativo dirigido a adultos e estudantes com experiência em formação profissional online. No total, foram obtidas 244 respostas, das quais 228 foram consideradas válidas e utilizadas na análise. O tratamento dos dados foi realizado através de modelação de equações estruturais com recurso ao método *Partial Least Squares* (PLS-SEM), permitindo a avaliação dos modelos de medida e estrutural.

Os resultados obtidos poderão ser úteis para empresas que desenvolvem cursos online ou implementam programas de formação para colaboradores, na medida em que permitem uma utilização mais eficaz dos elementos de gamificação para aumentar o envolvimento, a satisfação e a motivação dos utilizadores.

Adicionalmente, o estudo contribui para o aprofundamento do conhecimento científico sobre os fatores que influenciam a adoção do ensino online, bem como para uma melhor compreensão do papel da gamificação na construção da experiência do utilizador em contextos educativos.

Palavras-chave: educação online, gamificação, personalização, envolvimento social, aplicação prática, realização, satisfação dos alunos, intenção de continuidade, motivação.

DECLARATION

During the creation of this document, the author used ChatGPT (OpenAI) for the following support language editing, improve the clarity and academic style of the text. After using this tool, the author reviewed and edited the content as needed and assumed full responsibility for the content of the work.

TABLE OF CONTENTS

ABBREVIATIONS	i
ABSTRACT	ii
RESUMO	iii
DECLARATION	iv
ACKNOWLEDGEMENTS.....	viii
CHAPTER 1 – INTRODUCTION	1
1.1. Study Relevance	1
1.2. Study Objectives	1
1.3. Structure of the Dissertation.....	2
CHAPTER 2 - LITERATURE REVIEW.....	3
2.1. The Rise of Online Education in Contemporary Learning Environments	3
2.2. Online Learning for Professional Development.....	4
2.3. Gamification: Conceptualisation and Key Dimensions	5
2.3.1. Personalization in Gamified Learning.....	6
2.3.2. Social Engagement in Gamified Learning	7
2.3.3. Practical Application in Gamified Learning	8
2.3.4. Achievement in Gamified Learning.....	9
2.4. Learner Satisfaction in Gamified Online Learning	9
CHAPTER 3 - CONCEPTUAL MODEL.....	11
CHAPTER 4 – METHODOLOGY	14
4.1. Type of Study	14
4.1.1. Research Design and Method.....	15
4.2. Population and Sampling	15
4.3. Data Collection.....	15
4.4. Measurement Scales	16
CHAPTER 5 - DATA ANALYSIS AND DISCUSSION OF RESULTS.....	17
5.1. Sample Characterization	17
5.2. Evaluation of Measurement Models	19

5.3. Evaluation of the Structural Model	24
5.4. Hypotheses Testing	27
5.5. Discussion of Results	28
CHAPTER 6 - CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH	32
6.1. Main Findings	32
6.4. Study Limitations	34
6.5. Suggestions for Future Research	34
REFERENCES	35
APPENDICES	41
<i>Appendix A – Definition of Constructs</i>	<i>41</i>
<i>Appendix B – Table with a brief description of constructs</i>	<i>42</i>
<i>Appendix C – Survey about user experience in the career development online education</i>	<i>45</i>
<i>Appendix D – Summary of respondents' comments from the survey.....</i>	<i>49</i>

LIST OF TABLES

TABLE I. HYPOTHESES OF THE RESEARCH.....	13
TABLE II. RELIABILITY AND VALIDITY	21
TABLE III. FORNELL AND LARCKER CRITERION.....	21
TABLE IV. INDICATOR ITEMS HTMT	22
TABLE V. INNER MODEL VIF	23
TABLE VI. SUMMARY OF HYPOTHESIS TESTING.....	26

LIST OF FIGURES

FIGURE 1. CONCEPTUAL MODEL	12
FIGURE 2. AGE DISTRIBUTION	18
FIGURE 3. GENDER DISTRIBUTION	18
FIGURE 4. EMPLOYMENT STATUS DISTRIBUTION	19
FIGURE 5. PLS ALGORITHM MODEL	24
FIGURE 6. MODEL FIT	26

ACKNOWLEDGEMENTS

I would like to thank Professor Joanna Santiago for agreeing to be my academic supervisor, as well as for all her advice, support, and guidance.

I would like to thank my family for their interest and help, especially in distributing my questionnaire.

I would like to thank my husband for his support throughout my work on my dissertation, his encouragement and words of support helped me stay confident in myself and my ideas, and see this dissertation through to a successful conclusion.

CHAPTER 1 – INTRODUCTION

1.1. Study Relevance

In today's world, there are so many digital and technological changes, such as artificial intelligence, automation, cloud computing, and data analytics, rethinking work processes around the world that they cannot help but affect all areas of society (Williams & Williams, 2025). Modern society is characterized by a huge number of distractions and rapidly changing patterns of media consumption. The growth in the amount of information leads to information overload, a situation where the volume of incoming information exceeds the capacity to process it (Moko et. al., 2023). Short content, such as videos or clips on YouTube and Instagram, facilitates rapid information processing but also reduces concentration. This is confirmed by research findings that demonstrate a direct link between increased screen time spent on entertainment apps and decreased academic performance (Haiyao & Halim 2026). This phenomenon makes it difficult for people to focus on long learning sessions without an interactive format that supports repetition, self-paced learning combined with concise, visually supported, and multimodal resources (Tarigan et. al., 2025).

At the same time, the long-term impact of the COVID-19 pandemic, combined with ongoing technological progress, the increasingly widespread shift toward online formats in education, work, and entertainment, as well as market growth and competition in the EdTech sector, the need for continuous learning and professional development is growing. This includes regular practice that promotes effective learning and understanding, as well as building self-confidence and overcoming feelings of fear and vulnerability (Ferro-Soto & Vila-Alonso, 2025).

Modern professionals must regularly upgrade their skills, adapt to new technologies, including being prepared to use online tools to communicate with colleagues and customers (Williams & Williams, 2025), and remain competitive in the job market. Therefore, it is important to identify tools and methods that help workers remain satisfied, motivated, and ready to continue their education.

1.2. Study Objectives

This study aims to investigate the impact of game mechanics on satisfaction and the intention to continue online education in the field of career development. The work includes an analysis of the influence of gamification, i.e., entertaining, engaging activities in which interaction between players takes place (Hamari et al., 2014), which is expressed in this work through four

emotional aspects (personalization, social engagement, practical application, and achievement). Gamification is becoming increasingly common on online learning platforms as a tool that promotes engagement, expressed through participation in academic, social, or extracurricular activities (Hamari et al., 2014), as well as increased motivation (Mekler et al. 2015).

Accordingly, the purpose of this study is to examine the complex interrelationships between gamification and online professional development training in order to understand how this might influence satisfaction and motivation to continue learning. Specifically, the study aims to answer the following research questions:

1. How does gamification influence user satisfaction with online professional development training?
2. How does user satisfaction influence learners' intention to continue professional development training?
3. Which gamification components contribute most significantly to perceived usefulness and perceived ease of use?

The EdTech sector is highly competitive, and this study, as mentioned earlier, aims to analyze how gamification can influence learners' motivation and satisfaction during career development training.

1.3. Structure of the Dissertation

This document is composed of six chapters. The first chapter of the dissertation presents the research objectives, as well as its academic and practical significance, relevance, and contribution to the scientific and business communities. Chapter two presents a comprehensive review of the literature relevant to this study. It examines the key elements of gamification, as well as the aspects of user experience and behavior that it influences. It also provides a thorough analysis of the variables inherent in the models used (the Technology Acceptance Model and Expectation Confirmation Theory). Subsequently, Chapter three articulates the Structure of the Conceptual model. Chapter four, the Methodology, explains the Study design, Sample Selection and the Data Collection Instruments and Procedures. Chapter five provides an in-depth analysis of the data collected and presents the findings. The concluding chapter summarizes the thesis, synthesizes the key findings, and offers constructive recommendations for future research.

CHAPTER 2 - LITERATURE REVIEW

2.1. The Rise of Online Education in Contemporary Learning Environments

Learning is an integral part of personal development, involving the acquisition of new skills and knowledge. With the advancement of technology and the world in general, online learning has become a popular format. Online learning, also known as e-learning or virtual education, can be described as a form of knowledge transfer using digital technologies and the Internet (Nimsath, 2025).

In recent years, online education has become increasingly popular. The transition from traditional offline learning to various modern online formats was caused and accelerated by several factors occurring in the world. One of the causes was the COVID-19 pandemic, due to which people had to adhere to quarantine measures, which required a transition to online modes of work, study, and communication. After the outbreak of the COVID-19 pandemic, online education became more important than ever (Williams & Williams, 2025). Another important factor was the development of digital technologies and devices, as well as general technological progress. With the advent of the internet and online technologies, e-learning became an obvious trend leading to a different development of modern education (Estrada, 2025). Another factor is the globalization and increased population mobility, which has a profound impact on the structure of industry and business development (Guo, 2025). People are actively moving from one country to another and from one city to another, which has made flexible and location-independent formats of learning and working particularly relevant. This flexibility allows students to move away from traditional forms of classroom learning and office work in favor of online or hybrid formats.

Online education has a huge range of advantages, which is why the modern approach to learning has become so widely sought after. This method of learning allows you to acquire new knowledge and skills without being tied to a specific time or place; all you need to study is a digital device. Online education offers freedom not only in terms of time and place, but also in terms of the form of learning, with video lessons, webinars, recorded lessons, and other formats being acceptable. In a broad sense, e-learning includes various forms of learning conducted on the Internet (Culduz, 2024). It includes the provision of academic programs in the form of lectures, professional development courses, skills training, and informal learning opportunities using online platforms and tools (Culduz, 2024).

However, online education also has disadvantages compared to traditional formats. Successful online learning requires a high level of proficiency with digital devices, as well as

their immediate availability to students. Problems related to adapting to the online education environment can become critical for some students, as not all students have equal access to the Internet and the necessary digital technologies (Stan, 2024).

This dissertation examines a narrow aspect of online education, namely online education for professional development, which is aimed at older students. This type of education has its own characteristics and advantages, which will be discussed in more detail in the next section of this chapter.

2.2. Online Learning for Professional Development

The format of education using digital technologies has become particularly necessary, popular, and in demand in the context of professional development for adults, people who want to advance their careers or move into a new professional field, as professionals now go through a career cycle that spans multiple roles, sectors, and technological landscapes (Korzh & Supikov, 2023). In the past, it was sufficient for employees and job seekers to obtain professional education and periodically attend advanced training courses, which allowed for diversification of training content depending on the specific needs of participants (Mikhailenko & Zharkova, 2023). However, with the increasing complexity of organizational processes, growing market competition, and the introduction of new technologies, specialists need to constantly learn new things (Korzh & Supikov, 2023).

The purpose of such education may be either to acquire new knowledge or skills necessary to retain one's current job and continue to perform the necessary tasks at a high level, or to prepare for career growth, which includes a combination of psychological, social, and economic factors in an employee's development, or a change in professional activity (Korzh & Supikov, 2023). The choice of online education for professional development may be motivated by the desire to study in one's free time, as well as the opportunity to choose a truly interesting field of study that may not be available offline in the city where the potential student lives. The introduction of digital devices and technologies allows one to control the time, place, and pace of learning, as well as reduces the cost of education (Tymchuk et. al., 2024).

These learners typically have a high level of intrinsic motivation. Some seek employment and therefore require fast and efficient training that differs from lengthy university programs. Others must complete mandatory training required by their employers in order to maintain their position and avoid negative career consequences. A third group consists of individuals who pursue additional courses to enhance their skills within their current field, aiming for professional growth and higher income.

Despite high levels of motivation, the cognitive load often remains significant, as the learning materials include complex grammar, unfamiliar vocabulary, and various syntactic structures, especially since most adult learners combine their studies with full-time employment or other responsibilities (Moko et. al., 2023). Even with strong intrinsic motivation linked to deeper learning, greater effort, and more persistence in tackling challenging tasks (Sulyman & Zidan, 2026), online learning places significant cognitive and self-regulatory demands on adult learners.

That is why effective methods and special tools are needed to maintain interest, engagement, and enjoyment throughout the learning process. One possible solution could be gamified learning, which creates special opportunities for upskilling, strengthening long-term career growth and reducing the likelihood of increasing staff turnover (Ferro-Soto & Vila-Alonso, 2025).

2.3. Gamification: Conceptualisation and Key Dimensions

Gamification means the application of various emotional mechanics typically used in games in a non-game context to increase engagement and motivation (Williams & Williams, 2025). Game mechanics can be used in various fields of activity, such as education, work, sales of goods and services, and even space training (Williamson et. al., 2025). There are several approaches that allow us to characterize and present the concept of gamification in terms of its constituent parts. Some use game elements such as points, badges, levels, competitions, and leaderboards to describe it, which turn learning into an engaging experience reminiscent of a game (Paliy & Perekhod, 2025). Others describe gamification as a series of emotional aspects that influence satisfaction, motivation, or other factors. For example, game mechanics contribute to strengthening and maintaining emotional and cognitive activity, which promotes user motivation, retention, and satisfaction (Sesliokuyucu, 2025).

The use of gamification brings a number of advantages, both for those who implement it in products or services and for those who use them. Game mechanics make the learning process more accessible and understandable, especially for those who have difficulty with traditional learning (Paliy & Perekhod, 2025). In addition, gamification promotes a sense of accomplishment, healthy competition, and social connectedness, which encourages the intention to continue learning (Nasution & Amali, 2025). In addition to its many advantages, gamification also has disadvantages, such as the formation of a habit of receiving rewards for certain actions and a feeling of constant competition (Dicheva et al., 2015).

In this study, gamification is described using four emotional elements that work to achieve the goal of increasing motivation and engagement: personalization, social engagement, practical application, and achievement. In the following sections, each of these elements will be examined in more detail.

2.3.1. Personalization in Gamified Learning

Personalization, as one of the elements of gamification, is characterized by the opportunity for students to have an individualized experience interacting with both the platform itself and with teachers and other students who are also participating in a specific online course, built on the basis of learning about users to allow providers to offer game elements tailored to those users (Rodrigues et al., 2020). Adaptive educational systems tailor game elements to student profiles, preferences, and actions, creating a unique experience (Papadakis & Karakose, 2025).

The introduction of personalization into the learning process allows the learning process to be adapted to the unique goals, desires, tasks, pace, and abilities of each student. A key problem with traditional teaching methods, which are conducted in a face-to-face format without the use of interactive formats, is their inability to meet the diverse needs and learning styles of students, which may include differences in perception, memory, problem solving, or decision making (Al-Saadi & Yahya, 2025). Students may have completely different abilities: while some students may thrive in a lecture environment, others find it difficult to master the material without interactive and personalized learning (Rodrigues et al., 2020). In addition, personalized learning programs with adapted content can be provided to achieve unique learning and career goals (Iswati & Hastuti, 2024).

Gamification essentially seeks to engage the player in order to create a stronger and longer-lasting relationship with the provider of the product or service. Engagement is achieved when users perform actions based on their own motivation, which may be driven by personal characteristics, such as a high internal threshold of responsibility, or social factors, such as pressure from financial constraints or group status (Larionov et al., 2025). It is thanks to this engagement and desire to participate in the development of learning that pieces of “user content” appear, which were created through the mutual work of the developer and the user (Erenli, 2014). Personalization elements can include creating your own avatar with the ability to choose its appearance and other characteristics, personalized achievements, feedback format, certificates, and level progress (Mekler et. al. 2015). All of the above examples help strengthen the link between progress in game-based learning and real professional development. Such a gamification element as personalization encourages autonomy and self-regulated learning,

allowing students to progress (Jalil et al., 2025). Therefore, the following hypothesis is proposed: H1a. Personalization positively affects perceived ease of use.

The following sections of this chapter will examine other components of gamification in detail.

2.3.2. Social Engagement in Gamified Learning

Social elements in educational platforms that use gamification include team assignments, group challenges, rankings, the ability to view other students' profiles, and communication. These techniques allow students to feel a sense of belonging and develop communication, teamwork, and leadership skills (Bharti & Yadav, 2025). For example, leaderboards display students' achievements in comparison with other students, creating healthy competition and stimulating the desire to improve results (Mettini & Wiegel, 2025).

Social interaction as an element of gamification is characterized by the ability for students to communicate with each other in an interactive format, as well as the ability to compare student results with each other using a rating system and leaderboards, which leads to a more dynamic and engaging experience for students (Hamari et. al., 2014). Many professional development training programs also include features such as shared challenges, collaborative missions, and player-generated content (Williamson et al., 2025). These elements promote engagement and enable social connections (Williamson et al., 2025).

These types of social interactions can help keep students motivated, as gamified social mechanisms serve as a means of boosting morale and psychological safety (Williamson et al., 2025). Moreover, social engagement in online learning environments extends beyond the completion of the course itself. When students interact with peers who share their professional interests and goals, they not only receive emotional support and encouragement in the learning process, but also form valuable connections for the future (Nicholson., 2014), which opens up broad opportunities for creativity and feedback. These peer relationships may continue after the course ends, providing opportunities for knowledge exchange, career guidance, networking, and collaboration on professional projects (Hsu & Lin, 2008). Since all participants are engaged in the same domain of development, they can offer highly relevant advice and practical insights. For example, how they applied newly acquired skills in their jobs or how they navigated their career transitions. Thus, social engagement not only enhances motivation and persistence during the course but can also contribute to long-term career growth and sustained learning intentions. The above findings lead to the following hypothesis: H1b. Social interaction positively influences perceived ease of use.

2.3.3. Practical Application in Gamified Learning

Practical application as a component of gamification allows students to see and imagine the practical application of the skills and knowledge they acquire, improve memory, and develop critical thinking, collaboration, and decision-making skills (Chettri et al., 2026). In traditional education, theoretical material often prevails over practical tasks. In gamified learning, on the contrary, the learning process includes games, pictures, characters, and interactive tasks. These techniques help students more easily imagine how the information they have learned can be applied in practice.

The long-term goal of gamification is to create conditions that allow the player to engage more deeply with the real context and then leave them in the real world (Nicholson, 2014). In addition, practical application within gamified learning environments allows learners to engage with content that closely resembles real-life professional scenarios (Chettri & Chandrababu, 2025). When knowledge is presented in the form of interactive visual materials, dialogues, simulations, or tasks performed by a personalized avatar, learners can more easily relate new concepts to their workplace experiences. One example is a course on strategic management that was developed with game elements in mind and included real-life case studies in which students had to identify advantages and potential risks in a game format, as well as work in groups and demonstrate leadership (Ferro-Soto et al., 2025). The practical focus increases intrinsic motivation, as people clearly understand that the skills, they are acquiring are not purely theoretical, but can be immediately applied to their work and career growth.

Gamified structures also frequently include progressive levels or mission-based learning paths, which act as a roadmap of competencies. This allows learners to visualize their growth step-by-step and make direct connections between their advancement in the course and potential advancement in their careers (Mekler et al. 2015). To this end, courses create avatars to represent the learner's identity in the metaverse and highly immersive visual maps (Rodrigues et al., 2020). As a result, practical application improves both knowledge retention and learning transfer, allowing learners to apply new skills more confidently and sustainably in real-world contexts, and mechanisms such as quest completion and progress visualization can be powerful motivators that transform learning tasks from burdens into challenges that need to be overcome (Deterding et al., 2011). Therefore, the following hypothesis is proposed: H2a. Practical application positively influences perceived usefulness.

2.3.4. Achievement in Gamified Learning

Achievement is a central motivational component of gamification, as learners naturally strive to reach goals, demonstrate progress, and receive recognition for their efforts. Typically, learners respond positively to systems that emphasize digital rewards, transparency, and instant feedback (Mekler et. al. 2015).

Gamified online courses often include badges, certificates, progress indicators, levels, or rankings that serve as visible markers of achievement. The opportunity to exchange earned virtual rewards or levels for real prizes or gifts also serves as motivation to achieve them (Nicholson, 2014). Users who actively engage with these elements in their learning seek a sense of accomplishment and a desire to participate in the game's storyline or mechanics (Neeli, 2014). These reward mechanisms reinforce learners' motivation by providing positive feedback and a sense of personal growth (Hamari et.al., 2014). Games have remarkable motivational power; they use a number of mechanisms to encourage people to participate in them (Dicheva et al., 2015). Additionally, reminders and streak-based mechanics help encourage consistency: when learners miss study sessions and risk losing progress, notifications can stimulate them to re-engage with the course and restore their achievement status.

Both intrinsic motivation (the desire to learn skills and improve) and extrinsic motivation (receiving rewards, superiority over others) contribute to increased effort and persistence throughout the learning process (Han, 2025). When learners successfully achieve pre-set goals, it contributes to a sense of competence and satisfaction, which in turn strengthens their desire to continue learning and strive for future achievements (Mettini & Wiegel, 2025).

Thus, achievement-oriented elements of gamification can directly increase student satisfaction and positively influence their intention to continue learning in the context of professional development. Based on this, the following hypothesis is put forward: H2b. Achievements positively influence perceived usefulness.

2.4. Learner Satisfaction in Gamified Online Learning

Student satisfaction with online education occurs when the course experience meets or exceeds initial expectations. Adult learners typically begin professional development programs with clear goals, such as improving job performance, gaining new qualifications, or transitioning to a new career path. When gamification elements increase motivation, make progress visible, and contribute to meaningful learning outcomes, learners understand that their efforts are worthwhile. Gamification helps maintain learner motivation and thus helps them achieve their

goals more comfortably (Hamari et al., 2014). Based on this, the following hypothesis is put forward: H6. Actual use affects satisfaction.

In addition, integrating practical and career-related tasks helps students see the direct link between their learning and real-world benefits. This increases their perception of the value of the course and contributes to higher levels of satisfaction. Gamification is often associated with increased motivation and engagement, which directly affects cognitive performance (Mekler et. al., 2015).

Satisfaction is closely linked to the intention to continue learning (Bhattacharjee, 2001). If a learner successfully achieves the desired improvement, such as obtaining a new position or improving professional skills, positive reinforcement occurs. Gamification enhances this effect by making achievements more visible and emotionally rewarding throughout the learning process. As a result, learners are more likely to repeat the experience, knowing that this method has previously helped them achieve important professional goals. Thus, gamification has the potential not only to increase immediate satisfaction, but also to promote sustained, long-term participation in online professional learning (Dicheva et al., 2015). Therefore, the following hypothesis is proposed: H7 Satisfaction positively affects continuance intention.

CHAPTER 3 - CONCEPTUAL MODEL

The conceptual model on which this research is based is founded on the works of Technology Acceptance Model (Davis, 1989; Davis et al., 1989) and Expectation Confirmation Theory (Oliver, 1980). The first work that formed the basis of the conceptual model of this research is the Technology Acceptance Model (TAM) developed by Davis (1989). In the modern world new technologies and digital products are constantly being developed. They include a huge number of features, which affects their overall complexity. To verify the actual benefits and impact on users, it is necessary to have a model that allows for a truly comprehensive and realistic assessment based on specific criteria (Davis et al., 1989). The TAM model defines the relationship between users' desire to adopt and use new technology depending on its perceived usefulness and perceived ease of use (Davis & Venkatesh, 1996). It is important to evaluate the ease and usefulness of implementing new technologies, as well as digital products or their individual parts, for the user. After all, if the product is very complex and the user does not perceive the benefits of using it, then its usefulness will be minimal.

The second work that formed the basis of the conceptual model of this research is the expectation confirmation theory (ECT). ECT shows the relationship between the user's initial expectations and actual satisfaction (Oliver, 1980). The ECT model includes: expectation formation, satisfaction from confirmation or refutation, and cognitive adaptation (Hossain & Quaddus, 2011).

These studies were selected to explain how gamification affects user satisfaction and continue learning based on the perceived usefulness and ease of use of this new technology. Gamification in this work is defined as a set of emotional aspects of the user that arise during the learning process, rather than a set of specific game mechanics.

The integration of the two models described above into the conceptual framework of this study enables a comprehensive evaluation of gamification as a new technology. This evaluation considers both user interaction with the technology, measured through perceived ease of use and perceived usefulness, and outcomes of technology use, measured through learner satisfaction and intention to continue using it. In this study, gamification is defined as an experience that encourages participation, is enjoyable and engaging, and fosters user involvement (Craven, 2014). Figure 1 shows a diagram of how each element of the conceptual model influences the others.

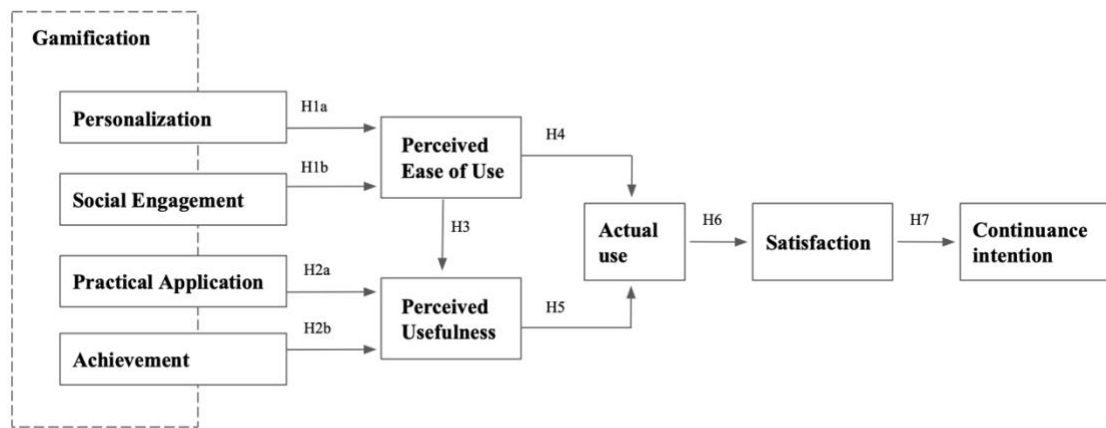


Figure 1. Conceptual Model

Source: own elaboration-based on TAM (Davis, 1989; Davis et al., 1989) and ECT (Oliver, 1980).

The TAM model formed the basis of the conceptual model of this research work, since gamification and its main parameters are a new digital technology. It is necessary to understand how well the user understands how to use this new technology and how much they feel its benefits. If gamification, as a new technology, is very difficult to use and requires a lot of resources to learn how to use it, and the positive effect of its use is not properly appreciated, then the implementation of this new technology is not justified in practice (Al-Emran et al. (2018).

Gamification can be evaluated as a useful tool in the concept of educational activity not only on the condition of good indicators of perceived ease of use and usefulness, but also on the condition of high user satisfaction indicators (Bhattacharjee (2001).

Specifically, the gamification elements personalization and social engagement, as defined and elaborated in the previous chapter, are hypothesized to influence perceived ease of use by providing a tailored, individualized learning experience and opportunities for social comparison and interaction with other users (Rodrigues et al., 2020; Papadakis & Karakose, 2025; Bharti & Yadav., 2025).

Conversely, the gamification elements practical application and achievement are hypothesized to influence perceived usefulness, as they allow learners to attain tangible outcomes, receive rewards, and apply theoretical knowledge in practical, interactive tasks (Chettri et al., 2026; Deterding et al., 2011; Ferro-Soto & Vila-Alonso, 2025).

Based on these relationships, specific hypotheses have been formulated to test the effects of these gamification attributes on perceived ease of use, perceived usefulness, satisfaction, and continued use. These hypotheses are summarized in Table I.

Table I. Hypotheses of the Research

Hypothesis	Relationship	Theoretical Framework
H1a	Personalization affects Perceived Ease of Use	Davis et al. (1989); Papadakis & Karakose (2025); Rodrigues et al. (2020).
H1b	Social Engagement affects Perceived Ease of Use	Davis et al. (1989); Venkatesh & Bala (2008); Bharti & Yadav (2025); Nicholson (2014); Dicheva et al. (2015).
H2a	Practical Application affects Perceived Usefulness	Davis et al. (1989); Chettri et al. (2026); Ferro-Soto & Vila-Alonso (2025).
H2b	Achievement affects Perceived Usefulness	Davis et al. (1989); Hamari & Eranti (2011); Hamari et al. (2014); Mekler et al. (2015).
H3	Perceived Ease of Use affects Perceived Usefulness	Davis et al. (1989); Venkatesh & Davis (2000); Teo (2008).
H4	Perceived Ease of Use affects Actual use	Davis et al. (1989); Venkatesh et al. (2003); Ifinedo (2011).
H5	Perceived Usefulness affects Actual use	Davis et al. (1989); Venkatesh & Davis (2000); Al-Emran et al. (2018).
H6	Actual use affects Satisfaction	Oliver (1980); Bhattacharjee (2001); Hsu & Lin (2008); Estrada (2025).
H7	Satisfaction affects Continuance intention	Oliver (1980); Bhattacharjee (2001); Hsu & Lin (2008).

Source: own elaboration

The next chapter will describe the research methodology in detail, namely the format for collecting and verifying data to confirm or refute hypotheses.

CHAPTER 4 – METHODOLOGY

This chapter describes the type of study, its population and sample, as well as the data collection instruments and procedures.

4.1. Type of Study

This study is based on a positivist research philosophy. Positivism involves the study of objective reality and the ability to analyze data and, based on this, draw certain generalizations and conclusions (Saunders et al., 2023). This philosophical approach seeks to minimize subjective reasoning and rely on numbers and data. Within the positivist approach, significant attention is paid to identifying cause-and-effect relationships between the phenomena under study (Saunders et al., 2023). The objective of this study is to examine the impact of gamification on user satisfaction and continuance intentions in the online education sector, rather than focusing on a single company as a case study. Specifically, the research investigates the influence of gamification's emotional aspects personalization, social engagement, practical application, and achievement on the learning process and the completion of online professional development courses. The research can be classified as positivist, as it focuses on observable social phenomena and seeks to identify causal relationships between gamification elements and learner responses (Saunders et al., 2023).

With regard to the research methodology, a deductive approach was adopted in this study. This approach involves seeking explanations for the causal relationships between variables (Saunders et al., 2023). The study was conducted using a deductive framework. It was based on existing theories, including TAM and ECT, and examined the initial theoretical propositions regarding the impact of gamification on satisfaction and learning retention. An extensive literature review was conducted to support hypothesis development and provide a foundation for interpreting the findings. After reviewing the existing literature, testable hypotheses were formulated, which were subsequently confirmed or refuted through data collection and analysis (Saunders et al., 2023).

An exploratory component is also present, as the study aims to enhance understanding of the phenomenon of gamification in online learning and identify areas for further investigation.

This study is mono-method quantitative. This method allows for the collection of measurable data and the subsequent conduct of statistical analysis based on that data (Saunders et al., 2023). The quantitative method enables the analysis of relationships between variables

and the derivation of objective indicators (Saunders et al., 2023). The study aims to minimize subjective influence during the data analysis phase. The chosen philosophy, approach, and methodological choices form the foundation of this study, thereby influencing the methods used to collect and analyze data, which will be discussed in more detail in the next section.

4.1.1. Research Design and Method

A survey was used as the data collection tool. The questionnaire was chosen because it allows for the collection of data from a large number of participants and enables statistical testing of hypotheses on a large group of respondents (Saunders et al., 2023). Data were collected in a single time wave. To measure the variables, scales adapted from the scientific literature were used, which were then converted to a Likert scale. The survey includes questions about users' demographic characteristics, as well as sections devoted to emotional aspects that influence user satisfaction.

4.2. Population and Sampling

The population for this study consists of adults who have completed or are currently participating in online professional development training and have agreed to participate in the survey. To ensure the relevance of the sample, the cover letter accompanying the survey provided information on the criteria that are appropriate and necessary for eligibility to participate in the survey. Additionally, screening questions were included at the beginning of the survey, in which participants were asked to indicate their age, gender, type of employment, and confirm their experience in completing online courses aimed at career development.

Respondents who indicated that they had taken such educational courses continued to participate in the main part of the survey, while for the other participants, the survey was completed at this stage. The study used a non-random sampling method based on the availability of respondents in the required group.

4.3. Data Collection

Data was collected using Google Forms from sources such as social networks, professional communities, and personal acquaintances. One such source was the social network LinkedIn, through which a link to the survey was sent to respondents with experience in professional courses. In some cases, respondents shared the survey link with their colleagues and acquaintances who met the criteria for participation. This approach made it possible to attract

participants who truly had experience relevant to the study, which improved the quality of the analysis.

Participation in the survey was voluntary and anonymous. Completing the questionnaire took between 5 and 7 minutes. The survey consisted of several sections. The first section, mentioned earlier, included basic demographic questions. The second part of the survey contained mandatory questions regarding the assessment of the experience of taking online courses for professional development. Respondents were asked to rate the presence of elements such as Personalization, Social Engagement, Practical Application, and Achievement in their training programs. Participants assessed their level of agreement with the statements. The third part of the survey focused on assessing perceptions of game elements in online professional development training and the degree of satisfaction.

Data collection was conducted between February 2 and March 9, with 244 respondents participating in the survey during this period. Based on the scoring results, namely the question in the first part of the survey, which assessed the experience of taking online courses for professional development, the final sample consisted of 228 respondents with relevant experience. Thus, 6.6 percent of the total number of initial survey participants were excluded from the final sample.

4.4. Measurement Scales

To measure the study variables detailed in Appendix A, scales based on previously published studies were used. Appendix B provides the original references and scales used for each variable. The statements were adapted to the context of online professional development education. All questions in the survey were structured using a 7-point Likert scale. Survey participants were presented with a choice to rate their level of agreement with statements, where the lowest level was expressed as Strongly disagree and the highest as Strongly agree.

The study measured variables such as personalization, social engagement, practical application, achievement, perceived ease of use, perceived usefulness, actual use, satisfaction and continuance intention. The statements and sources used for the scales are presented in Appendix B.

After completing the survey, the data obtained was processed and analyzed using SmartPLS 4.

CHAPTER 5 - DATA ANALYSIS AND DISCUSSION OF RESULTS

This chapter provides a comprehensive overview of topics such as sample characterization, investment behavior and patterns among participants, evaluation of measurement models, evaluation of the structural model, hypotheses testing, discussion of results.

5.1. Sample Characterization

A total of 244 responses were collected as part of the survey. However, not all respondents met the criteria established for inclusion in the subsequent analysis. Specifically, 16 participants indicated that they had no experience taking online courses aimed at professional development. Consequently, these respondents were excluded from the subsequent analysis, as their responses did not align with the study's objectives and did not allow for an assessment of the impact of gamification elements in the context of online learning.

The final sample consisted of 228 respondents with relevant experience in taking online courses for professional development. It was this group of participants that was used for further analysis, including the assessment of demographic characteristics and the testing of research hypotheses. In the first part of the survey, respondents were asked to answer questions regarding their sociodemographic characteristics, including age, gender, and current employment status.

An analysis of the age distribution showed that a large number of respondents fall into the 26–30 age group (30%), the 31–40 age group (30%), and the 20–25 age group (28%). A smaller proportion of participants fell into the 41–50 age category (8%). The smallest number of respondents were in the age groups under 20 (2%) and over 51 (2%).

This distribution appears logical, as the majority of study participants belong to the economically active population currently in the phase of active professional development and career growth. In turn, representatives of the younger and older age groups may be less involved in professional training processes focused on career development. More detailed results are presented in Figure 2.

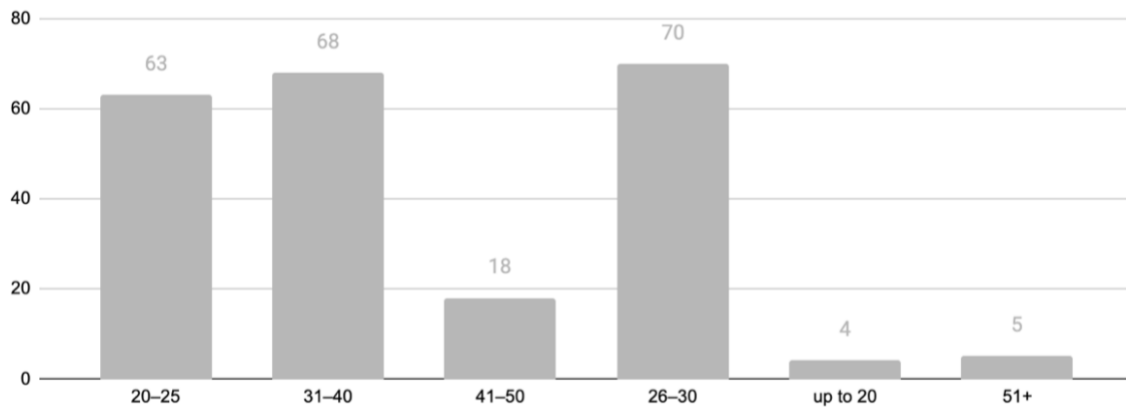


Figure 2. Age distribution

Source: own elaboration

In terms of gender distribution, both men and women participated in the study, though there was a slight predominance of female respondents. This distribution does not limit the applicability of the study's findings, but rather reflects the actual composition of the respondents who participated. More detailed results are presented in Figure 3.

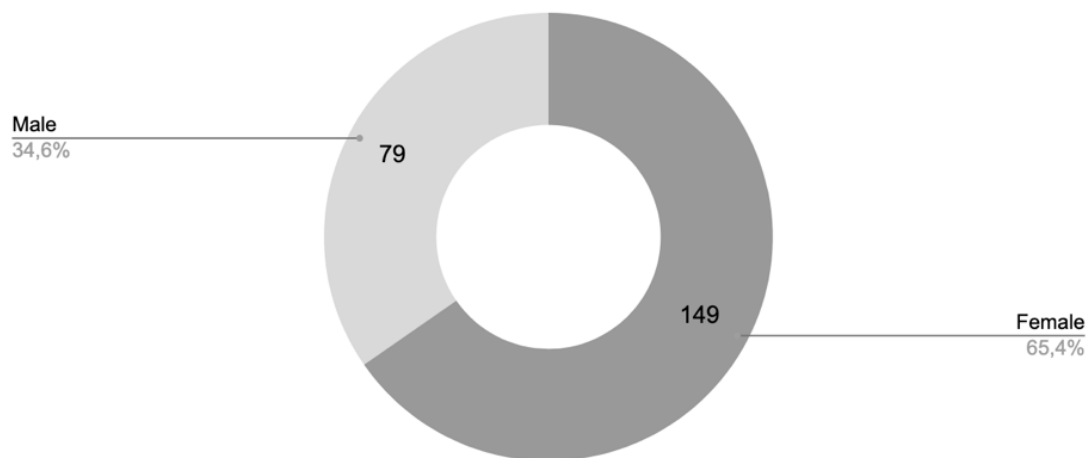


Figure 3. Gender distribution

Source: own elaboration

An analysis of respondents' answers regarding their employment status revealed that the largest proportion of respondents are employed full-time. The sample also includes a significant number of participants who are balancing work and study. Those employed part-time, freelancers, and other categories are represented to a lesser extent. More detailed results are presented in Figure 4.

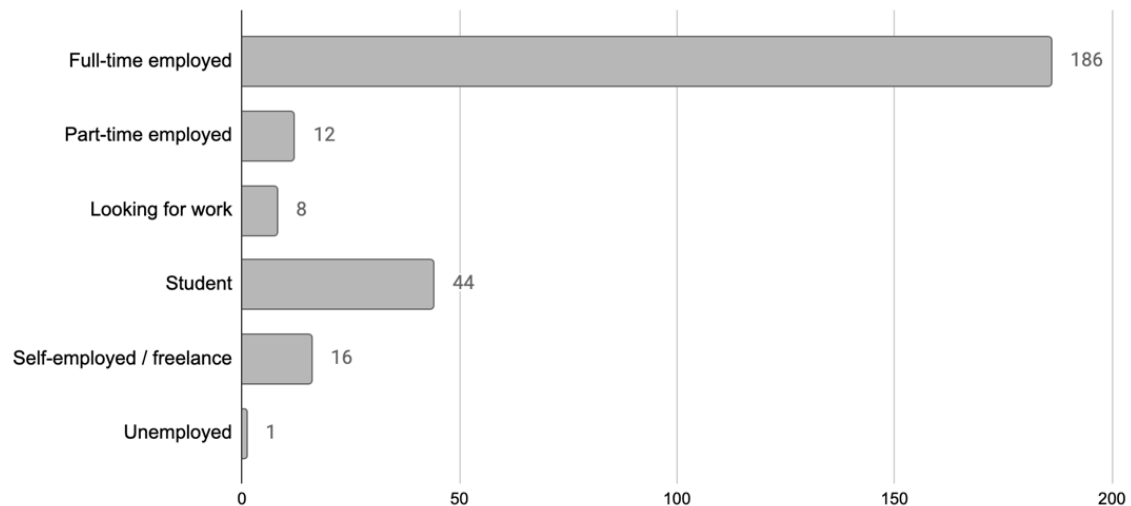


Figure 4. Employment status distribution

Source: own elaboration

The results suggest that individuals who are actively engaged in the workforce or in the early stages of their careers show the greatest interest in taking online courses for professional development.

Overall, the demographic characteristics of the sample correspond to the study's target group and confirm that the data obtained reflect the opinions of respondents who have relevant experience and motivation to take online training for professional development.

5.2. Evaluation of Measurement Models

To analyze the impact of gamification on student satisfaction and their intention to continue online professional training, partial least squares structural equation modeling (PLS-SEM) was employed using SmartPLS 4 software.

This method was chosen due to its widespread use in research aimed at studying complex models involving several latent variables and multiple relationships between them. The technical reliability of PLS-SEM stems from the integration of principal component analysis (PCA) and multiple regression analysis (Fong & Law, 2013). PLS-SEM allows for the simultaneous estimation of both measurement and structural models. The strengths and versatility of PLS-SEM have led to its widespread use across various academic disciplines, including management and marketing (Fong & Law, 2013). The tool's flexibility in handling non-normal data, tolerance for small sample sizes, and ability to model complex relationships highlight its significant methodological and practical advantages. The use of PLS-SEM aligns

with approaches employed in a number of recent studies on technology adoption factors and user behavior in digital environments.

In the first stage, the measurement model was evaluated to determine the reliability and validity of the scales used. In PLS-SEM, reliability and validity are assessed using Cronbach's alpha, test-retest reliability, and the average extracted variance. This stage allows us to determine the extent to which correctly formulated questions reflect the latent variables being measured and enable an adequate assessment of respondents' attitudes toward the aspects under consideration (Hair et al., 2021).

Cronbach's alpha is a statistical measure of a scale's internal consistency, reflecting the degree of correlation among items that measure a single latent variable (Fong & Law, 2013). The generally accepted threshold is 0.7 (Hair et al., 2021). A value above this threshold indicates sufficient consistency among the scale items. In this study, Cronbach's alpha values for all indicators exceed this threshold, indicating a high level of internal consistency.

Composite reliability is a measure that more accurately assesses internal consistency by accounting for the contribution of each indicator relative to its load. A threshold positive value is considered to be 0.7. The results obtained in this study demonstrate high values of this indicator, which confirms the reliability of the measured latent constructs. It should be noted, however, that excessively high values exceeding 0.95 may indicate a high degree of similarity among the indicators (Hair et al., 2021).

The average extracted variance was also used to analyze validity. It reflects the proportion of variance in the indicators explained by the corresponding latent variable. The threshold value is 0.5 (Fong & Law, 2013). In this study, all values exceed the established threshold, indicating the presence of convergent validity.

The results, presented in detail in the Table II, confirm that the scales used are highly reliable and valid, and that the selected indicators adequately reflect the latent variables being measured. This conclusion allows us to proceed to a further analysis of the structural model and a test of the research hypotheses.

Table II. Reliability and Validity

Construct	Item	Loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Achievement	A1	0.584	0.799	0.915	0.859	0.609
	A2	0.751				
	A3	0.869				
	A4	0.881				

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION
IN ONLINE PROFESSIONAL TRAINING

Actual Use	AU1	0.891	0.926	0.929	0.947	0.818
	AU2	0.924				
	AU3	0.922				
	AU4	0.881				
Continuance intention	CI1	0.978	0.975	0.975	0.984	0.953
	CI2	0.974				
	CI3	0.976				
Perceived Ease of Use	PE1	0.974	0.975	0.975	0.983	0.952
	PE2	0.977				
	PE3	0.975				
Perceived Usefulness	PU1	0.967	0.979	0.980	0.985	0.942
	PU2	0.961				
	PU3	0.977				
	PU4	0.976				
Personalisation	P1	0.866	0.883	0.918	0.912	0.675
	P2	0.855				
	P3	0.869				
	P4	0.770				
	P5	0.738				
Practical Application	PA1	0.922	0.968	0.969	0.975	0.886
	PA2	0.939				
	PA3	0.944				
	PA4	0.955				
	PA5	0.947				
Satisfaction	S1	0.951	0.965	0.966	0.974	0.904
	S2	0.960				
	S3	0.951				
	S4	0.941				
Social Engagement	SE1	0.939	0.955	1.005	0.963	0.812
	SE2	0.906				
	SE3	0.941				
	SE4	0.948				
	SE5	0.868				
	SE6	0.796				

Source: SmartPLS

The next step involved assessing discriminant validity using the Fornell–Larker criterion. This statistical method is widely used in structural equation modeling and is designed to verify that each latent variable measures a unique aspect rather than overlapping with other constructs in the model. The purpose of this stage of the analysis is to ensure that each construct is sufficiently distinct from the other variables. According to this criterion, the square root of the average extracted variance for each construct must exceed the values of its correlations with other constructs in the model (Fong & Law, 2013). Detailed data on the measured indicators are presented in the Table III.

Table III. Fornell and Larcker Criterion

	Achievement	Actual Use	Continuance intention	Perceived Ease of Use	Perceived Usefulness	Personalisation	Practical Application	Satisfaction	Social Engagement
Achievement	0.780								
Actual Use	0.375	0.905							
Continuance intention	0.426	0.800	0.976						
Perceived Ease of Use	0.296	0.749	0.685	0.976					
Perceived Usefulness	0.377	0.850	0.812	0.810	0.971				
Personalisation	0.280	0.402	0.357	0.388	0.389	0.821			
Practical Application	0.351	0.513	0.460	0.592	0.573	0.464	0.942		
Satisfaction	0.307	0.774	0.754	0.774	0.806	0.440	0.590	0.951	
Social Engagement	0.476	0.193	0.197	0.150	0.188	0.214	0.260	0.187	0.901

Source: SmartPLS

This matrix also shows the correlation values located on the diagonal and highlighted in bold. If the values on the diagonal exceed the corresponding values in the rows and columns, this indicates that the criterion for discriminant validity has been met. Analysis of the results shows that, for all constructs, the values on the diagonal exceed the correlation values with other variables. Thus, we can conclude that each construct explains a larger proportion of the variance of its indicators than the proportion it shares with other variables, which confirms the presence of discriminant validity and the correctness of the measurement model.

The next stage of the analysis involved an assessment of discriminant validity using the HTMT index. This method allows for an evaluation of the degree of distinctiveness among latent variables. The purpose of this stage was to verify the extent to which the variables included in the model are truly distinct from one another and do not duplicate similar concepts.

According to recommendations, values below 0.85 indicate good discriminant validity, but values ranging from 0.85 to 0.90 are also considered acceptable (Fong & Law, 2013). Analysis of the results showed that most HTMT values fall below the established threshold of 0.85 (Hair, 2018). However, there is a single instance where this value is exceeded, which may indicate their conceptual proximity, but the value still remains within the normal range. Detailed data on the measured indicators are presented in the Table IV.

Table IV. Indicator Items HTMT

	Achievement	Actual Use	Continuance intention	Perceived Ease of Use	Perceived Usefulness	Personalisation	Practical Application	Satisfaction	Social Engagement

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION
IN ONLINE PROFESSIONAL TRAINING

Achievement									
Actual Use	0.397								
Continuance intention	0.447	0.842							
Perceived Ease of Use	0.262	0.784	0.702						
Perceived Usefulness	0.373	0.891	0.830	0.829					
Personalisation	0.347	0.438	0.383	0.395	0.407				
Practical Application	0.325	0.537	0.474	0.610	0.587	0.467			
Satisfaction	0.298	0.815	0.775	0.798	0.827	0.460	0.611		
Social Engagement	0.632	0.199	0.195	0.141	0.185	0.265	0.256	0.184	

Source: SmartPLS

The next step in the analysis involved assessing multicollinearity using the variance inflation factor. This metric helps determine the degree to which predictors are interdependent within the model. The purpose of this stage is to identify possible excessive correlation among independent variables, which could distort the results of assessing the impact of factors on dependent variables. The higher the VIF value, the stronger the correlation between the corresponding predictor and other variables in the model.

A VIF value of 1 indicates no correlation between the predictor and other variables, which is the ideal case (Hair et al., 2021). Values in the range from 1 to 5 indicate an acceptable level of correlation, whereas values above 5 may indicate the presence of significant multicollinearity and the need to revise the model (Hair et al., 2021). An analysis of the results showed that the VIF values for all the relationships under consideration are within acceptable limits and do not exceed the threshold value. Detailed data are presented in the Table V.

Table V. Inner model VIF

	VIF
Achievement -> Perceived Usefulness	1.156
Actual Use -> Satisfaction	1.000
Perceived Ease of Use -> Actual Use	2.914
Perceived Ease of Use -> Perceived Usefulness	1.562
Perceived Usefulness -> Actual Use	2.914
Personalisation -> Perceived Ease of Use	1.048
Practical Application -> Perceived Usefulness	1.626
Satisfaction -> Continuance Intention	1.000
Social Engagement -> Perceived Ease of Use	1.048

Source: SmartPLS

Two variables in the model have VIF values of 1, indicating the absence of multicollinearity among the predictors. For the remaining variables, the values range from 1 to 2.9, which also indicates an acceptable level of correlation. The absence of multicollinearity issues in the model is confirmed, which validates the inclusion of the variables and allows us to proceed to a further analysis of structural relationships.

5.3. Evaluation of the Structural Model

The second key stage of the analysis involves evaluating the structural model. It aims to test hypotheses regarding the relationships between latent variables. While the previous stage focused on assessing the reliability and validity of the measurement model, this stage focuses primarily on analyzing the strength and significance of the relationships between constructs.

In this dissertation, gamification is represented by key components such as personalization, social engagement, practicality, and achievements. These elements are considered factors that influence the perception of ease of use and perceived usefulness. Figure 5 presents a structural model of the study, illustrating the relationships between the latent variables under consideration. The arrows between the latent variables indicate path coefficients, reflecting the strength and direction of one variable's influence on another. The values within the latent variables correspond to the coefficient of determination and show the proportion of explained variance for each variable within the model (Hair et al., 2021).

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION IN ONLINE PROFESSIONAL TRAINING

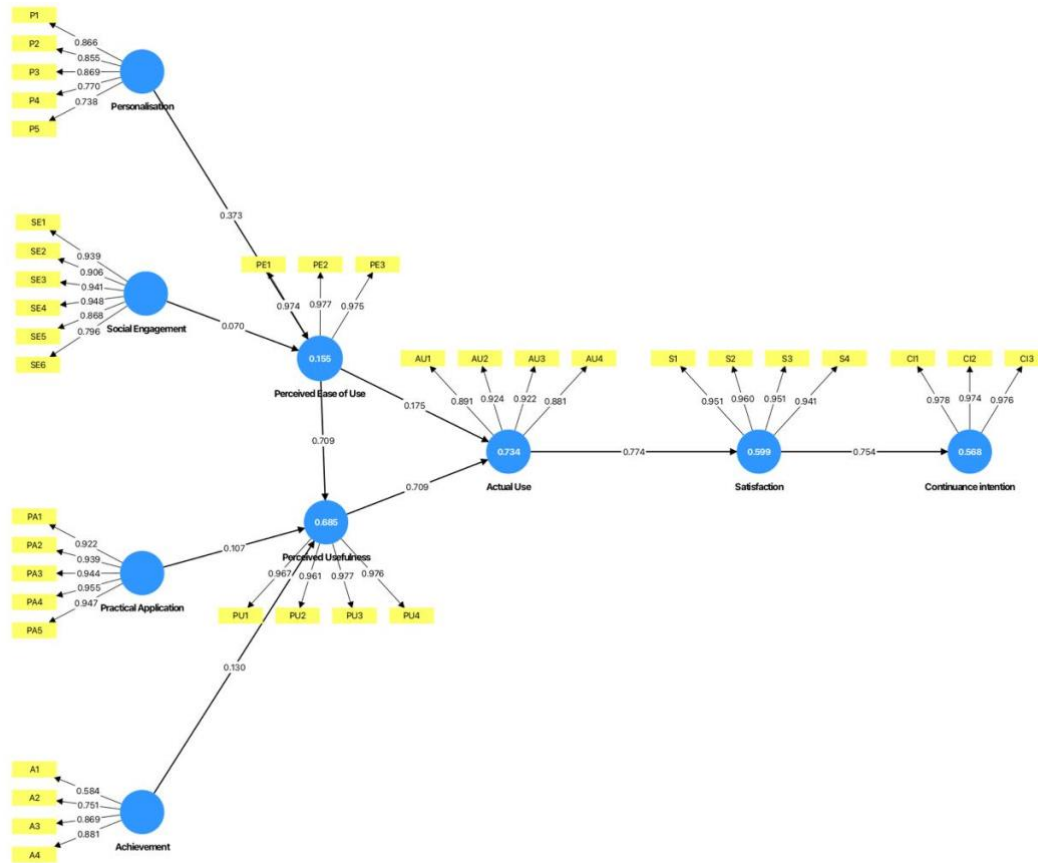


Figure 5. PLS Algorithm Model

Source: SmartPLS

An analysis of the results shows that personalization has a significant impact on the perception of ease of use (0.373). This indicates that tailoring content to individual user characteristics contributes to a more user-friendly experience with educational courses aimed at career development. This conclusion is also supported by qualitative data from respondents' open-ended comments, which highlighted the importance of being able to adapt the course to the user's individual pace and preferences. At the same time, the influence of social engagement on the perception of ease of use is minimal (0.070), indicating a lack of a significant correlation between these variables and suggesting that the presence of group assignments, competitions, and rankings does not affect the ease of the learning process itself.

Practical orientation has a relatively weak influence on the perception of perceived usefulness (0.107). This suggests that, despite the importance of practical content, its contribution to the formation of perceived usefulness is limited. The achievement variable also has a weak influence on perceived usefulness (0.130). This indicates that elements related to rewards and achievements contribute to perceived usefulness but are not a determining factor.

An analysis of the relationship between perceived ease of use and perceived usefulness reveals a fairly strong positive correlation. The path coefficient between perceived ease of use and perceived usefulness is 0.709, indicating a significant relationship between these variables. However, the coefficient of determination for perceived ease of use is 0.155, indicating a relatively low level of explained variance. This estimate may suggest that the perception of ease of use is influenced by additional factors not included in the model. In turn, the perceived usefulness variable is characterized by a high level of explained variance (0.685) and indicates that the model largely explains users' perceptions of usefulness.

According to the analysis, perceived ease of use has a moderate effect on actual use (0.175). This suggests that the ease of use of game elements in career development training contributes to the adoption of gamification, but is not a determining factor. In turn, perceived usefulness has a significantly stronger influence on actual use (0.709). This leads to the conclusion that it is precisely the perception of usefulness that is the key factor determining the actual use of online courses.

The actual use variable has a significant impact on user satisfaction (0.774), while satisfaction, in turn, also has a strong positive impact on the intention to continue using the product (0.754). The results of the analysis confirm the logical sequence of the model, in which perceived usefulness has a key influence on actual use, which, in turn, determines user satisfaction and their intention to continue learning.

As part of the structural model evaluation, measures of model fit were also analyzed. One of the key indicators is the standardized root mean square error, which reflects the difference between the observed correlations in the original data and the correlations predicted by the model. In this study, the SRMR value for the saturated model is 0.070, which is within the acceptable range and indicates a good fit between the model and the data. At the same time, the SRMR value for the estimated model is 0.155, which exceeds the recommended threshold and may indicate a less accurate fit of the model to the empirical data.

Additionally, the NFI was examined, which is used to assess model quality and indicates the degree of its fit to the observed data. NFI values above 0.90 are traditionally interpreted as evidence of a good model fit, while values in the range of 0.80 - 0.90 are considered acceptable. In this study, the NFI value for the saturated model is 0.813, and for the estimated model, it is 0.793. The obtained values are at an acceptable level but do not reach the threshold value corresponding to high model quality. Detailed data are presented in the Figure 6.

	Saturated model	Estimated model
SRMR	0.070	0.155
d_ULS	3.601	17.714
d_G	1.878	2.436
Chi-square	2324.476	2573.556
NFI	0.813	0.793

Figure 6. Model Fit

Source: SmartPLS

The proposed model demonstrates satisfactory agreement with the data: on the one hand, it provides an acceptable level of explanation for the relationships under study; on the other hand, the model does not achieve ideal levels of agreement, which may be due to the limited number of factors included in the model.

5.4. Hypotheses Testing

In the next step of the study, the proposed hypotheses were tested using statistical analysis. This stage aims to assess the statistical significance of the relationships between latent variables and allows for conclusions regarding the confirmation or rejection of hypotheses about the general population based on sample data.

As part of the study, nine hypotheses were formulated, reflecting the presumed influence of certain constructs on others. The hypotheses were evaluated using p-values, with a significance threshold of 0.05. The results of the analysis showed that seven of the nine hypotheses are statistically significant and have been confirmed. At the same time, two hypotheses were not confirmed. Detailed data are presented in the Table VI.

Table VI. Summary of hypothesis testing

	Relationship	Path Coefficient	t-value	P=	Decision
H1a	Personalisation -> Perceived Ease of Use	0.373	4.662	0.000	Supported
H1b	Social Engagement -> Perceived Ease of Use	0.070	1.192	0.233	Not supported
H2a	Practical Application -> Perceived Usefulness	0.107	1.818	0.069	Not supported
H2b	Achievement -> Perceived Usefulness	0.130	2.841	0.005	Supported
H3	Perceived Ease of Use -> Perceived Usefulness	0.709	10.460	0.000	Supported
H4	Perceived Ease of Use -> Actual Use	0.175	2.699	0.007	Supported
H5	Perceived Usefulness -> Actual Use	0.709	10.955	0.000	Supported
H6	Actual Use -> Satisfaction	0.774	15.867	0.000	Supported

H7	Satisfaction -> Continuance intention	0.754	14.322	0.000	Supported
----	---------------------------------------	-------	--------	-------	-----------

Source: SmartPLS

In particular, the hypothesis regarding the effect of practical application on perceived usefulness was not supported ($p = 0.069$), which exceeds the established significance level. The hypothesis regarding the effect of social engagement on perceived ease of use was also not supported ($p = 0.233$), indicating the absence of a statistically significant relationship between these variables.

A fairly large number of relationships are characterized by a high level of statistical significance ($p < 0.001$), including the influence of actual use on satisfaction, perceived ease of use on perceived usefulness, perceived usefulness on actual use, personalization on perceived ease of use and satisfaction on continuance intention. The results confirm most of the hypotheses put forward and indicate the existence of significant relationships between the model's key variables.

5.5. Discussion of Results

The data analysis, described in detail earlier in Chapter 5 of this dissertation, allows us to draw a number of important conclusions regarding the impact of gamification elements on user perception and behavior in the context of online professional development training. This chapter discusses the research findings in light of the identified relationships and the theoretical framework. The data obtained confirmed most of the hypotheses put forward at the beginning of the dissertation.

The collected data show that, among the components of gamification, personalization has a statistically significant positive effect on the perceived ease of use of the platform. This is confirmed by both the quantitative results of the analysis and the qualitative data obtained from respondents' open-ended comments; detailed information is provided in the appendix. Thus, Hypothesis H1a is confirmed. The results show that it is important for users to tailor the educational process to their individual needs, including adjusting the pace of learning and the course content. The collected data indicate that it is important for students to set their own goals and have the ability to manage their learning pace without stress and without having to follow a general schedule. These findings are consistent with research results (Rodrigues et al., 2020; Isotani, 2022), which note that companies developing educational courses analyze user data, such as profile, preferences, learning activity, and geographic location, and, based on this,

provide personalized learning materials or types of assignments, which directly impacts the convenience of learning.

The analysis of the data also revealed a statistically significant result regarding the achievement metric, which has a positive impact on the perceived usefulness of educational courses. Thus, Hypothesis H2b is confirmed. The results indicate that rewards, achievements, and other elements incorporated into the learning process help users maintain motivation and recognize the benefits in terms of understanding their progress and academic achievements. The presence of an achievement system, feedback, and recognition of results can enhance the perception of the value of learning, as users receive confirmation of their own development and successful mastery of the material. Similar results were reported in studies (Hamari et al., 2014; Dicheva et al., 2015), which note that achievements, badges, and levels help visualize learning progress and foster a sense of moving toward the ultimate goal.

Unlike previous studies, the results of this study did not confirm a significant effect of social engagement on the perceived ease of use of online courses. Thus, Hypothesis H1b is not supported. A number of authors (Hamari et al., 2014; Williamson et al., 2025) emphasize that student interaction, both during the learning process and during collaborative practical work, contributes to better mastery of the material through mutual assistance and moral support. However, the results indicate that for an audience of adult students, social interaction, such as chats, forums, and ratings, plays a motivational rather than a functional role. In the online environment, among the study's target audience, such tools are perceived not as a factor simplifying the use of the platform, but as an opportunity for networking and communication.

Similarly, H2a regarding the influence of practical orientation on perceived usefulness was not confirmed. This may indicate that, based on the open-ended questions, users do not always directly perceive the inclusion of practical elements in a training course as a factor contributing to its usefulness; rather, the quality of the materials provided in the course is more important to them. This result partially contradicts the findings of previous studies (Nicholson, 2014; Chettri et al., 2026; Rodrigues et al., 2020), which emphasized the importance of simulating real-world professional scenarios in learning that allow learners to visualize their progress and link course advancement to potential career advancement. One possible explanation may be that users are not always confident that the knowledge they have gained is applicable to their actual professional activities; even if the course includes practical assignments, much also depends on the relevance of the instructional material and its alignment with current professional requirements.

Although not all hypotheses regarding specific elements of gamification were confirmed, the study's findings based on the theoretical models underlying the research framework were deemed highly significant.

In particular, H3, H4, and H5, which are based on TAM, were confirmed. The results showed that perceived ease of use positively influences both the perceived usefulness of the platform and its actual use. Furthermore, perceived usefulness also has a positive effect on the actual use of the educational platform. The results obtained are fully consistent with studies (Davis, 1989; Davis et al., 1989; Davis & Venkatesh, 1996) that assert that ease of use and perceived usefulness remain critical factors in the adoption of new technologies. Adult learners often balance their studies with professional and personal responsibilities, so convenience and accessibility are particularly important. When a platform is easy to navigate and does not require significant additional effort to understand its functionality, users are more likely to perceive it as useful and actually use it.

Similarly, the relationships based on ECT were confirmed. The study results show that actual use of the platform has a positive effect on user satisfaction, and satisfaction, in turn, has a significant impact on the intention to continue learning in the future. Thus, H6 and H7 are confirmed. Satisfaction has a particularly statistically significant influence on the intention to continue learning. The results indicate that satisfaction with the educational experience plays a key role in shaping users' long-term engagement and their willingness to continue professional development through online platforms. This conclusion is consistent with studies (Bhattacharjee, 2001; Dicheva et al., 2015; Hamari et al., 2014), which highlight the importance of achieving desired outcomes for learner motivation and satisfaction, as well as the need for positive reinforcement and emotional rewards to ensure sustainable long-term learning.

An analysis of both quantitative data and respondents' open-ended comments shows that users perceive gamification more as a supplementary rather than a defining element of the online learning process. In particular, it was noted that the presence of game mechanics cannot compensate for low-quality educational content. Even with gamification, users do not demonstrate high engagement if the course itself lacks value or is not sufficiently interesting. Thus, gamification cannot be viewed as a universal tool for improving learning effectiveness.

Furthermore, the results highlight the importance of the context in which gamification is applied. Depending on the type and duration of the course, its impact can vary significantly. In more structured and complex disciplines, game elements can facilitate the understanding of the material, whereas in creative fields, their significance may be lower. It should be noted separately that excessive or haphazard implementation of gamification can have a negative

effect. Respondents noted that overuse of game elements can distract from the learning process and reduce focus on the course content. In this regard, it can be concluded that gamification is most effective when applied selectively, consciously, and as a trigger. For example, during those stages of learning where a decline in user engagement is observed. This approach allows it to be used as a support tool rather than as the main element of the educational process.

CHAPTER 6 - CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

6.1. Main Findings

The aim of this dissertation was to analyze the impact of gamification on user satisfaction and their intention to continue online learning in the context of professional development. The results of the statistical analysis show that the impact of gamification on satisfaction is ambiguous. The most significant impact was found in the personalization component. The achievement component also demonstrates a positive effect, whereas social engagement and practical orientation did not demonstrate the expected effect. This suggests that gamification can contribute to a positive user experience, but its effectiveness depends on the specific mechanisms used.

The analysis also shows that satisfaction has a direct positive impact on the desire and motivation to continue online learning. This indicates that a positive learning experience is one of the key factors determining users' long-term engagement and their willingness to continue their professional development through online platforms. Based on the study's findings, it can be concluded that satisfaction is one of the most important factors influencing the intention to continue learning, which underscores its central role in maintaining learners' motivation for further professional development. The study results indicate that gamification has a varied impact on user satisfaction and their desire to continue online learning. At the same time, the results show that satisfaction is shaped by a combination of factors, not just gamification. Although gamification can serve as an additional tool to enhance the learning experience, participants in the open-ended section of the survey emphasized the importance of high-quality educational content, the relevance of learning materials, and their applicability to professional needs. Thus, the results indicate that gamification can contribute to user satisfaction, but its effectiveness largely depends on the overall quality and value of the educational experience provided by the platform.

Based on the data obtained, it can also be concluded that the impact of individual gamification components on the perceived usefulness and ease of use of the platform is inconsistent. Personalization had a positive effect on perceived ease of use, while achievements had a positive effect on perceived usefulness. At the same time, social engagement and practical orientation did not demonstrate a statistically significant effect. The results suggest that the perceived usefulness of an educational platform is determined not only by the presence of game

elements, but also by the quality of the educational content, its relevance, and its alignment with users' professional needs.

6.2. Academic Contributions

This study contributes to the scientific understanding of the impact of gamification on user engagement and satisfaction in the context of online learning focused on professional development.

Unlike a number of previous studies, this paper examines gamification not through individual tools and types of game formats, such as rankings, dialogues, achievements, and so on, but through emotional and practical components. The study's findings complement existing theoretical approaches, including TAM, and highlight a direct, strong correlation between the perceived ease of use of a new technology and the perceived usefulness of its application.

Furthermore, the study emphasizes that the impact of gamification should be considered in conjunction with other factors that define the core of a product or service; in this case, the quality of the educational course's content.

6.3. Contributions for Practice

The practical significance of this study lies in the potential application of the findings in the development of online educational products and platforms, as well as in the creation of corporate training programs for organizations with a large number of employees.

The findings indicate that the implementation of gamification should not be viewed as a one-size-fits-all solution for increasing user engagement and satisfaction. An analysis of respondents' comments shows that the effectiveness of gamification largely depends on the subject matter and specifics of a particular course.

Furthermore, it was found that various gamification elements have different effects on the user experience, including engagement, perceptions of convenience and usefulness, as well as the intention to continue learning.

Particular attention should be paid to personalization, which has had the most significant impact on the perception of online learning. The use of personalization allows the educational process to be tailored to users' individual needs, ensuring a closer connection between the material being studied and their professional experience. This, in turn, facilitates the assimilation of information and promotes its further application in practice.

Therefore, companies are advised to focus primarily on the quality of educational content, viewing gamification as an additional tool for enhancing the user experience. In

particular, personalization can serve as one of the key elements that help increase engagement, motivation, and learning effectiveness.

6.4. Study Limitations

Despite the results obtained, this study has a number of limitations. First, the study sample was limited to a specific group of respondents, recruited primarily through the distribution of the survey on social media, which may affect the generalizability of the results.

Second, an analysis of respondents' open-ended comments revealed that perceptions of gamification in online courses aimed at professional development largely depend on the format and subject matter of the training. In particular, within more technical disciplines requiring in-depth and systematic study of the material, game elements may be perceived as a distraction, reducing concentration. At the same time, in courses focused on theoretical or creative fields, gamification and personalization elements may, on the contrary, help increase user interest and engagement.

Furthermore, the study is based on respondents' self-reports, which may introduce subjectivity into the data and affect the accuracy of the results' interpretation.

In addition, the study examined a limited set of gamification elements. However, in real-world educational settings, gamification may involve a broader range of components.

6.5. Suggestions for Future Research

Future research could focus on a more detailed examination of how other gamification components influence user satisfaction and engagement. It would be advisable to expand the model by incorporating additional factors, such as content quality and learners' individual characteristics.

A potential area for future research is the analysis of differences in the perception of gamification depending on the type and subject matter of online learning.

REFERENCES

- Abdillah, W., Berto, U., & Fidela, H. (2017). International Research Journal of Business Studies. *International Research Journal of Business Studies*.
<https://doi.org/10.21632/irjbs>
- Al-Emran, M., Mezhuyev, V., & Kamaludin, A. (2018). Technology Acceptance Model in M-learning context: A systematic review. *Computers & Education*, 125, 389–412. <https://doi.org/10.1016/j.compedu.2018.06.008>
- Al-Saadi, Z. M. H., & Yahya, N. Q. (2025). The Correlation between Iraqi EFL University Students' Cognitive Learning Styles and Expository Writing. *Journal of Posthumanism*, 5(11), 250–267. <https://doi.org/10.63332/joph.v5i11.3680>
- Bharti, M. K., & Yadav, S. (2025). Influence of gamification on student engagement and achievement motivation among secondary school students in India's hybrid learning environments. *Iconic Research and Engineering Journals*, 9(6). <https://doi.org/10.64388/irev9i6-1712981>
- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation model. *MIS Quarterly*, 25(3), 351–370. <https://doi.org/10.2307/3250921>
- Chettri P., Chandrababu R. (2025). *Simulation-Based Gamification in Nursing Education: A Systematic Review*. In ASPIH India 2025: Conference Proceedings.
<https://doi.org/10.54531/rils7333>
- Chettri, S., Sharma, R., & Das, A. (2026). *Practical application and experiential learning in gamified education*. *Journal of Interactive Learning Research*, 37(1), 23–41.
- Craven, D. (2015). Gamification in Virtual Worlds for Learning: A Case study of PIERSIM for Business Education. In *Gamification in Education and Business* (pp. 385–401). https://doi.org/10.1007/978-3-319-10208-5_19
- Culduz, M. (2024). Benefits and challenges of E-Learning, online education, and distance learning. In *Advances in higher education and professional development book series* (pp. 1–27). <https://doi.org/10.4018/979-8-3693-4131-5.ch001>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>

- Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: three experiments. *International Journal of Human-Computer Studies*, 45(1), 19–45. <https://doi.org/10.1006/ijhc.1996.0040>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer Technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. <https://doi.org/10.1287/mnsc.35.8.982>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness. In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (15th ed., pp. 9–15). <https://doi.org/10.1145/2181037.2181040>
- Dicheva, D., Dichev C., Agre G., Angelova G. (2015). *Gamification in Education: A Systematic Mapping Study*. *Educational Technology & Society* 18(3):75-88.
- Erenli, K. (2014). Gamification and Law. In *Gamification in Education and Business* (pp. 535–552). https://doi.org/10.1007/978-3-319-10208-5_27
- Estrada, L. T. (2025). Student satisfaction in online general education mathematics courses. *International Journal of Research Studies in Education*, 14(16). <https://doi.org/10.5861/ijrse.2025.25298>
- Ferro-Soto, C., & Vila-Alonso, M. (2025). Experiential learning: Designing differentiation strategies via gamification. *Journal of Management and Business Education*, 8(3), 495–509. <https://doi.org/10.35564/jmbe.2025.0027>
- Ferro-Soto, C., Padin, C., Lubbe, I., Svensson, G., & Høgevold, N. (2025). Determinants and outcomes of satisfaction in B2B sales relationships. *Journal of Business and Industrial Marketing*, 40(13), 61–76. <https://doi.org/10.1108/jbim-10-2022-0470>
- Fong, L., & Law, R. (2013). Hair, J. F. Jr., Hult, G. T. M., Ringle, C. M., Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications. ISBN: 978-1-4522-1744-4. 307 pp. *European Journal of Tourism Research*, 6(2), 211–213. <https://doi.org/10.54055/ejtr.v6i2.134>
- Guo, W. (2025). The Mechanism of Population Mobility Driving Economic Development from the Perspective of Social Networks. *Journal of Economics and Management Sciences*, 8(4), p8. <https://doi.org/10.30560/jems.v8n4p8>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) using R. In *Classroom companion: business*. <https://doi.org/10.1007/978-3-030-80519-7>

- Haiyao, Z., & Halim, N. D. A. (2026). Impact of different types of cognitive load in foreign language learning. *Environment and Social Psychology*, 11(1). <https://doi.org/10.59429/esp.v11i1.3538>
- Hamari, J., & Eranti, V. (2011). Framework for Designing and Evaluating Game Achievements. In *Think Design Play* (Vol. 6). <https://doi.org/10.26503/dl.v2011i1.545>
- Hamari, J., Koivisto, J., & Sarsa, H. (2014, January 1). Does Gamification Work? -- A Literature Review of Empirical Studies on Gamification. In *Hawaii International Conference on System Sciences*. <https://doi.org/10.1109/hicss.2014.377>
- Han, B. (2025). Effect Gamification on Efficiency: An analysis. *Applied and Computational Engineering*, 175(1), 37–41. <https://doi.org/10.54254/2755-2721/2025.ast25285>
- Hossain, M. A., & Quaddus, M. (2011). Expectation–Confirmation Theory in Information System Research: A Review and analysis. *Integrated Series on Information Systems/Integrated Series in Information Systems*, 441–469. https://doi.org/10.1007/978-1-4419-6108-2_21
- Hsu, C., & Lin, J. C. (2008). Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, 45(1), 65–74. <https://doi.org/10.1016/j.im.2007.11.001>
- Hung, K., Chen, A. H., Peng, N., Hackley, C., Tiwsakul, R. A., & Chou, C. (2011). Antecedents of luxury brand purchase intention. *Journal of Product & Brand Management*, 20(6), 457–467. <https://doi.org/10.1108/10610421111166603>
- Ifinedo, P. (2011). AN EMPIRICAL ANALYSIS OF FACTORS INFLUENCING INTERNET/E-BUSINESS TECHNOLOGIES ADOPTION BY SMES IN CANADA. *International Journal of Information Technology & Decision Making*, 10(04), 731–766. <https://doi.org/10.1142/s0219622011004543>
- Isotani, S. (2022). Automating gamification personalization to the user and beyond. *LA Referencia (Red Federada De Repositorios Institucionales De Publicaciones Científicas)*, 199-212. <https://doi.org/10.1109/tlt.2022.3162409>
- Iswati, L., & Hastuti, S. D. S. (2024). Activities and barriers in online professional development: A systematic literature review. *SHS Web of Conferences*, 202, 04006. <https://doi.org/10.1051/shsconf/202420204006>
- Jalil, M. T. M., Zakaria, N. A., & Yunus, N. M. (2025). ENHANCING BACTERIAL PHYSIOLOGY EDUCATION: A MIXED-METHODS STUDY ON THE IMPACT OF GAMIFICATION AND YOUTUBE-BASED INSTRUCTION. *International*

- Journal of Education Psychology and Counseling*, 10(60), 219–239. <https://doi.org/10.35631/ijepc.1060015>
- Jia, X., Pang, Y., Huang, B., & Hou, F. (2023). *Understanding consumers' continuance intention to watch streams: A value-based continuance intention model*. *Frontiers in Psychology*, 14, 1073301. <https://doi.org/10.3389/fpsyg.2023.1073301>
- Korzh, N., & Supikov, V. (2023). Online education: prospects for specialist's professional development. *University Proceedings Volga Region Social Sciences*, 2. <https://doi.org/10.21685/2072-3016-2023-2-14>
- Larionov, I. V., Drobysheva, T. V., & Polunina, A. A. (2025). Correlation between academic motivation and career orientations of employed and unemployed students. *Izvestiya of Saratov University Educational Acmeology Developmental Psychology*, 14(3 (55)), 250–260. <https://doi.org/10.18500/2304-9790-2025-14-3-250-260>
- Marandu, E. E., Makudza, F., & Ngwenya, S. N. (2019). Predicting Students' Intention and Actual Use of E-Learning Using the Technology Acceptance Model: A Case from Zimbabwe. *International Journal of Learning Teaching and Educational Research*, 18(6), 110–127. <https://doi.org/10.26803/ijlter.18.6.7>
- Mekler, E. D., Brühlmann, F., Tuch, A. N., & Opwis, K. (2015). Towards understanding the effects of individual gamification elements on intrinsic motivation and performance. *Computers in Human Behavior*, 71, 525–534. <https://doi.org/10.1016/j.chb.2015.08.048>
- Mettini, E., & Wiegel, N. (2025). The use of gamification in the educational process of higher education institutions. *Journal of Pedagogical Studies*, 10(3). <https://doi.org/10.12737/2500-3305-2025-10-3-127-143>
- Mikhailenko, N. V., & Zharkova, Y. O. (2023). Continuity in the formation of professional foreign language competence of researchers at advanced training courses. *Pedagogy Theory & Practice*, 8(9), 926–935. <https://doi.org/10.30853/ped20230136>
- Moko, A., Victor-Ikogh, M., & Okardi, B. (2023). Information Overload: a Conceptual model. *European Journal of Computer Science and Information Technology*, 11(5), 19–29. <https://doi.org/10.37745/ejcsit.2013/vol11n51929>
- Nasution, A., & Amali, M. T. (2025). The effectiveness of gamification in FitHub Yogyakarta's CRM to increase customer participation and retention. *Interdisciplinary Social Studies*, 4(4), 531–535. <https://doi.org/10.55324/iss.v4i4.911>

- Neeli, B. K. (2014). Gamification in the Enterprise: Differences from Consumer Market, Implications, and a Method to Manage Them. In *Gamification in Education and Business* (pp. 489–511). https://doi.org/10.1007/978-3-319-10208-5_25
- Nicholson, S. (2014). A RECIPE for Meaningful Gamification. In *Gamification in Education and Business* (pp. 1–20). https://doi.org/10.1007/978-3-319-10208-5_1
- Nimsath, Y. M. (2025). Feasibility and effectiveness of online learning in social work education in Sri Lanka. *Sri Lanka Journal of Social Work*, 9(2), 166–172. <https://doi.org/10.4038/sljsw.v9i2.35>
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469. <https://doi.org/10.1177/002224378001700405>
- Paliy, E., & Perekhod, S. (2025). Successful stock market gamification practices and their applicability in Russia. *Herald of Omsk University Series Economics*, 23(3), 25. [https://doi.org/10.24147/1812-3988.2025.23\(3\).25-37](https://doi.org/10.24147/1812-3988.2025.23(3).25-37)
- Papadakis, S., & Karakose, T. (2025). Gamification and student achievement: potential benefits, limitations, and effective use in educational environments. *Educational Process International Journal*, 19(1). <https://doi.org/10.22521/edupij.2025.19.529>
- Rodrigues, L., Toda, A. M., Palomino, P. T., Oliveira, W., & Isotani, S. (2020). Personalized gamification: A literature review of outcomes, experiments, and approaches. *Journal of e-Learning and Knowledge Society*, 699–706. <https://doi.org/10.1145/3434780.3436665>
- Saunders, M., Lewis, P., & Thornhill, A. (2023). *Research methods*. Pearson.
- Sesliokuyucu, O. S. (2025). *Gamification practices for service ecosystem experiences*. IGI Global.
- Song, H. G., & Jo, H. (2023). Understanding the continuance intention of omnichannel: combining TAM and TPB. *Sustainability*, 15(4), 3039. <https://doi.org/10.3390/su15043039>
- Stan, F. A., & Panduru A.-D. (2024). The Influence of Online Education over Marketing Students Education. In Proceedings of the International Scientific Conference ECOTREND 2024: *Digitalization-Sustainability-Competitiveness*.
- Sulyman, N., & Zidan, R. (2026). Intrinsic and extrinsic motivation in second language acquisition. *Comprehensive Journal of Science*, 10(ملحق 38), 1081–1090. <https://doi.org/10.65405/pp39ty26>

- Tarigan, F. N., Nasution, A. F., Fauzi, F. I., Hasibuan, S. A., Jidah, A., & Halawa, A. I. (2025). The Effects of Genially-Based Interactive Media through Flipped Learning on Literacy and Writing Skills of Students with Autism Spectrum Disorder. *Forum for Linguistic Studies*, 7(12). <https://doi.org/10.30564/fls.v7i12.11845>
- Teo, T. (2008). A path analysis of pre-service teachers' attitudes to computer use: applying and extending the technology acceptance model in an educational context. *Interactive Learning Environments*, 18(1), 65–79. <https://doi.org/10.1080/10494820802231327>
- Tymchuk, L., Vieilandie, L., Pavlova, V., Prokofyeva, L., Tadeush, O., & Bogdan, Z. (2024). Professional Education of Adults: Technological Challenges in the context of Neuroscience. *Revista Romaneasca Pentru Educatie Multidimensionala*, 16(3), 443–455. <https://doi.org/10.18662/rrem/16.3/903>
- Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a research Agenda on interventions. *Decision Sciences*, 39(2), 273–315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of Information Technology: toward a unified view1. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Walker, S. L., & Fraser, B. J. (2005). Development and validation of an instrument for assessing distance education learning environments in higher education: *the Distance Education Learning Environments Survey (DELES)*. *Learning Environments Research*, 8(3), 289–308. <https://doi.org/10.1007/s10984-005-1568-3>
- Williams, L. a. R., & Williiams, T. R. (2025). The experiences of college Students Impacted by COVID-19: Transitions from traditional didactic learning to online formats. *The Rehabilitation Professional*, 29(3). <https://doi.org/10.70385/001c.147036>
- Williamson, T., Nguyen, K., Korentsides, J., & Keebler, J. R. (2025). Game Mechanics in Space: Leveraging gamification to support crew performance and resilience. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 69(1), 921–925. <https://doi.org/10.1177/10711813251364796>

APPENDICES

Appendix A – Definition of Constructs

Construct	Definition	Reference
Personalization	A tool for creating a personalized user experience, which in turn increases customer engagement and loyalty, and involves tailoring products and services to the preferences, behavior, and needs of individual customers.	Rodrigues et al., 2020; Dicheva et al., 2015
Social Engagement	Tools such as team tasks and leaderboards that promote collaboration, knowledge sharing, and mutual motivation among students.	Rodrigues et al., 2020; Nicholson, 2014; Dicheva et al., 2015
Practical Application	The process of students assimilating material, participating in simulations and situations that reproduce real-life problems, which promotes active learning.	Ferro-Soto & Vila-Alonso, 2025; Rodrigues et al., 2020
Achievement	A positive learning outcome, such as a reward, which encourages healthy competition and intrinsic motivation during the learning process.	Hamari et al., 2014; Dicheva et al., 2015
Perceived Ease of Use	The degree to which a user believes that using a particular system or technology will not require any special effort on their part.	Davis, 1989; Davis & Venkatesh, 1996; Davis et al., 1989
Perceived Usefulness	The degree to which a user believes that using a particular system or technology will improve their work efficiency.	Davis, 1989; Davis & Venkatesh, 1996; Davis et al., 1989
Actual use	The process of actually using technologies or systems.	Davis, 1989; Davis & Venkatesh, 1996; Davis et al., 1989; Al-Emran et al., 2018
Satisfaction	A state in which the user is satisfied with the result of the service or product received when compared to their initial expectations, thereby forming a loyal attitude.	Oliver, 1980; Bhattacharjee, 2001
Continuance intention	User attachment to a product or service, which leads them to purchase more than one specific product and want to continue interacting with the brand.	Oliver, 1980; Bhattacharjee, 2001

Appendix B – Table with a brief description of constructs

Variable name	Original scale	Adapted scale in English	Code	Reference
Personalization	I make decisions about my learning.	I decide how my learning moves forward in the online course.	P1	Walker & Fraser (2005)
	I work during times that I find convenient.	I take the online course at a time that is convenient for me.	P2	
	I am in control of my learning.	I feel that I can control my progress in the online course.	P3	
	I play an important role in my learning.	I actively shape my own learning style when I take the online course.	P4	
	I approach learning in my own way.	I can adapt the assignments and learning to suit myself when I take the online course.	P5	
Social Engagement	I work with others.	I can interact with other students when I take the online course.	SE1	Walker & Fraser (2005)
	I relate my work to others' work.	I can easily compare my work with other students' work when I take the online course.	SE2	
	I share information with other students.	I can share information with other students when I take the online course.	SE3	
	I discuss my ideas with other students.	I can discuss my ideas with other students when I take the online course.	SE4	
	I collaborate with other students in the class.	I can collaborate with other students in class when I take the online course.	SE5	
	Group work is a part of my activities.	Group work is part of my activities when I take the online course.	SE6	
Practical Application	I study real cases related to the class.	I study real-life cases related to the subject when I take the online course.	PA1	Walker & Fraser (2005)
	I use real facts in class activities.	I use real-world facts in my class when I take the online course.	PA2	
	I work on assignments that deal with real-world information.	I work on tasks related to real-world information when I take the online course.	PA3	
	I work with real examples.	I work with real examples when I take the online course.	PA4	
	I enter the real world of the topic of study.	I immerse myself in the real world of the subject when I take the online course.	PA5	

Achievement	My achievement is highly regarded by others.	My achievements in completing the online course are valued by other students.	A1	Hung et al. (2011)
	I want others to look up to me because of my accomplishments.	I am pleased when others notice my progress and achievements in learning.	A2	
	Professional achievements are an obsession with me.	The learning achievements I get from online courses are important to me.	A3	
	Achieving greater success than my peer is important to me.	It is important for me to achieve greater success than other students when I take the online course.	A4	
Perceived Ease of Use	The use of live streaming to watch streams is clear and understandable.	The use of gamification when going through the training is clear and easy to understand.	PE1	Jia et al. (2023)
	I find it easy to watch streams.	It is easy for me to use elements of gamification.	PE2	
	I find it easy to do what I want to do in my use of live streaming to watch streams.	It is easy for me to follow a training course using gamification elements.	PE3	
Perceived Usefulness	Using the system improves my performance in my job.	Using gamification elements enhances my learning.	PU1	Venkatesh and Bala (2008)
	Using the system in my job increases my productivity.	Using gamification in my online education increases my performance.	PU2	
	Using the system enhances my effectiveness in my job.	Using gamification increases my effectiveness in my learning.	PU3	
	I find the system to be useful in my job.	I find gamification useful in my online education.	PU4	
Actual use	I use digital notes when learning.	I use game mechanics during online learning.	AU1	Marandu et al. (2019)
	I use the University website for learning purposes	I use online courses with gamification elements for educational purposes.	AU2	
	I use the University electronic library.	I complete assignments with points, ratings, and rewards.	AU3	

	I use mobile devices for learning purposes.	I use gamification for educational purposes.	AU4	
Satisfaction	I will be very satisfied with it.	I was satisfied with the online course with gamification elements.	S1	Abdillah et al. (2017)
	I will consider its quality to be very high.	I consider the quality of the online courses with gamification elements to be high.	S2	
	It basically meets my expectations.	The online courses with gamification elements mostly meet my expectations.	S3	
	It will enjoy using it.	I will enjoy using online courses with gamification elements.	S4	
Continuance intention	I plan to continue using the omnichannel service in the future.	I plan to continue to take online training with game mechanics.	CI1	Song and Jo (2023)
	I plan to increase the utilization of omnichannel services in the future.	I plan to increase my use of online learning with game mechanics in the future.	CI2	
	I will continue to use the omnichannel service in the future.	I will continue to use online learning with game mechanics in the future.	CI3	

Appendix C – Survey about user experience in the career development online education

User experience in the career development online education

You are invited to participate in a survey about your experience with online professional development courses (for work, career, skills).

This survey is part of my master's thesis at ISEG – University of Lisbon.

Your participation is anonymous and voluntary. Its results will only be used for educational purposes.

You can stop participating at any time.

By clicking "Next," you agree to participate.

Please answer based on your actual experience.

It will take about 7-10 minutes to complete.

* Indicates required question

Please answer a few short questions about yourself. This information is used only for research grouping and remains anonymous.

1. What is your age? *

Mark only one oval.

- ☐ up to 20
☐ 21-25
☐ 26-30
☐ 31-40
☐ 41-50
☐ 51+

2. What is your gender? *

Mark only one oval.

- ☐ Male
☐ Female
☐ Prefer not to say

3. What is your current employment type? *

Check all that apply.

- ☐ Full-time employed
☐ Part-time employed
☐ Self-employed / freelance
☐ Student
☐ Looking for work
☐ Unemployed

4. Have you ever taken an online course related to professional development? *
(e.g., a refresher course, learning new skills for work, changing careers, etc.)

Mark only one oval.

- ☐ Yes Skip to question 5
☐ No Skip to section 6 (Thank you for your time and participation!)

In this section, please reflect on the most recent online course you took for professional development. Try to recall your experience by answering the following statements.

5. The following statements relate to personalized aspects of your online learning experience. *

Please rate your agreement with each statement.

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I decide how my learning moves forward in the online course.	☐	☐	☐	☐	☐	☐	☐
I take the online course at a time that is convenient for me.	☐	☐	☐	☐	☐	☐	☐
I feel that I can control my progress in the online course.	☐	☐	☐	☐	☐	☐	☐
I actively shape my own learning style when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I can adapt the assignments and learning to suit myself when I take the online course.	☐	☐	☐	☐	☐	☐	☐

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION IN ONLINE PROFESSIONAL TRAINING

6. The following statements refer to the social aspects of your online learning experience, including interaction or engagement with other learners. *

Please rate your agreement with each statement.

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I can interact with other students when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I can easily compare my work with other students' work when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I can share information with other students when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I can discuss my ideas with other students when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I can collaborate with other students in class when I take the online course.	☐	☐	☐	☐	☐	☐	☐
Group work is part of my activities when I take the online course.	☐	☐	☐	☐	☐	☐	☐

7. The following statements relate to how well the online course supported the practical application of what you learned. *

Please indicate how much you agree with each statement.

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I study real-life cases related to the subject when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I use real-world facts in my class when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I work on tasks related to real-world information when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I work with real examples when I take the online course.	☐	☐	☐	☐	☐	☐	☐
I immerse myself in the real world of the subject when I take the online course.	☐	☐	☐	☐	☐	☐	☐

8. The following statements relate to your sense of progress and achievement during your online learning experience. *

Please rate your level of agreement with each statement.

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
My achievements in completing the online course are valued by other students.	☐	☐	☐	☐	☐	☐	☐
I am pleased when others notice my progress and achievements in learning.	☐	☐	☐	☐	☐	☐	☐
The learning achievements I get from online courses are important to me.	☐	☐	☐	☐	☐	☐	☐
It is important for me to achieve greater success than other students when I take the online course.	☐	☐	☐	☐	☐	☐	☐

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION IN ONLINE PROFESSIONAL TRAINING

The following section discusses some game elements commonly used in online learning platforms.

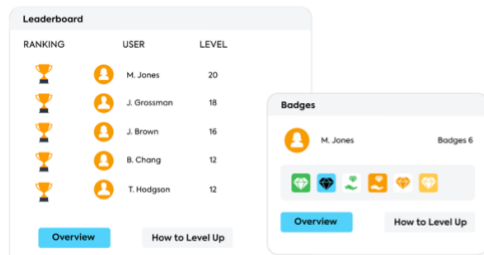
Please respond to the following statements based on your personal perception of how engaging and motivating you found the course.

Game elements can include features such as progress indicators, tasks, levels, rewards, badges, reminders, and other interactive elements. The use of such game elements in learning is often referred to as gamification.

In the following questions, the term “gamification” refers to the use of these game elements in a course.

In your most recent online course, these elements may have been present to varying degrees or not at all—this is normal.

If there were few or no game elements in the course, please respond to the statements by selecting the options with the lowest level of agreement.



9. Please rate how easy and intuitive it was for you to use the gamified elements in the course. *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
The use of gamification when going through the training is clear and easy to understand.	☐	☐	☐	☐	☐	☐	☐
It is easy for me to use elements of gamification.	☐	☐	☐	☐	☐	☐	☐
It is easy for me to follow a training course using gamification elements.	☐	☐	☐	☐	☐	☐	☐

10. Please rate how useful the gamified elements were for supporting your learning or progress. *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
Using gamification elements enhances my learning.	☐	☐	☐	☐	☐	☐	☐
Using gamification in my online education increases my performance.	☐	☐	☐	☐	☐	☐	☐
Using gamification increases my effectiveness in my teaching.	☐	☐	☐	☐	☐	☐	☐
I find gamification useful in my online education.	☐	☐	☐	☐	☐	☐	☐

11. Please rate how frequently you engaged with the gamified elements provided in the course. *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I use game mechanics during online learning.	☐	☐	☐	☐	☐	☐	☐
I use online courses with gamification elements for educational purposes.	☐	☐	☐	☐	☐	☐	☐
I complete assignments with points, ratings, and rewards.	☐	☐	☐	☐	☐	☐	☐
I use gamification for educational purposes.	☐	☐	☐	☐	☐	☐	☐

THE IMPACT OF GAMIFICATION ON LEARNER SATISFACTION AND CONTINUANCE INTENTION IN ONLINE PROFESSIONAL TRAINING

12. Please rate your overall satisfaction with the gamified elements in the course. *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I was satisfied with the online course with gamification elements.	☐	☐	☐	☐	☐	☐	☐
I consider the quality of the online courses with gamification elements to be high.	☐	☐	☐	☐	☐	☐	☐
The online courses with gamification elements mostly meet my expectations.	☐	☐	☐	☐	☐	☐	☐
I will enjoy using online courses with gamification elements.	☐	☐	☐	☐	☐	☐	☐

13. Please rate how likely you are to continue using learning platforms that include gamified elements in the future. *

Mark only one oval per row.

	Strongly disagree	Disagree	Somewhat disagree	Neither	Somewhat agree	Agree	Strongly agree
I plan to continue to take online training with game mechanics.	☐	☐	☐	☐	☐	☐	☐
I plan to increase my use of online learning with game mechanics in the future.	☐	☐	☐	☐	☐	☐	☐
I will continue to use online learning with game mechanics in the future.	☐	☐	☐	☐	☐	☐	☐

Comments

14. If you have any additional thoughts or comments about your online learning experience or the use of gamified elements, feel free to share them below.

Thank you for your time and participation!

Your responses have been recorded and will contribute to academic research on online learning and gamification.

Appendix D – Summary of respondents' comments from the survey

Age	Current employment type	Comment
31 - 40	Full-time employed	Gamification for me is a pleasant addition to the course, but not a mandatory element. At the moment, I only undergo training that is directly related to my work. In my case, the motivation to finish the course is simple - you need certain knowledge for the next career stage. And here the quality of the material and the expertise of the author, the availability of a sufficient number of practical tasks are in the foreground.
31 - 40	Full-time employed	If I take a professional online course, my training does not depend on the absence or availability of game mechanics. If they are unobtrusive, that's fine, I don't mind. If they are not there, it won't make my education worse. Perhaps this is the specificity of IT courses. For example, fire safety courses are definitely more fun to take in a game format.
31 - 40	Self-employed / freelance	Online learning has been a positive experience for me, especially because of its flexibility and accessibility. Gamified elements such as quizzes, progress tracking, and badges helped keep me motivated and engaged. When used thoughtfully, gamification makes learning more interactive and enjoyable without distracting from the course content.
51+	Full-time employed	Online learning should maintain a balance between clear theory and practical classes with examples and the opportunity to hone skills. Ratio: 30 / 70. Schemes and strategies should be fixed in clear algorithms, filled with information as close to reality as possible, with the possibility of changing the focus of the approach with inevitable correlations of processes.
41 - 50	Full-time employed, Student	I actively use LinkedIn for learning. Gamification elements are rarely found in corporate training. However, I like how certain tools like this help me stay motivated. I believe that gamification plays a more important role in achieving personal goals and self-education than in professional training.
26 - 30	Full-time employed, Student	I don't care if I use game mechanics or not, if they do: I will actively participate in them, if not: I won't care about their absence, it won't affect my motivation. First of all, I pay attention to the quality of information and the amount of practice in the course.
20 - 25	Full-time employed	I consider rating and widgets with course reminders to be quite effective elements of gamification, they contribute to additional motivation and involvement in the learning process.
41 - 50	Self-employed / freelance	I think gamification is ok but not essential for learning if you are motivated. If the content is not interesting to the student, maybe gamification would help with success.
41 - 50	Full-time employed	I consider online learning with the help of game elements to be very productive and useful in learning, as it is easier to learn information during the game.
26 - 30	Full-time employed	I would like to keep my motivation during my studies, especially in long-term courses. As a rule, they have enough motivation for the whole period.
51+	Self-employed/ freelance	I don't consider gamified elements to be important when choosing online courses. I choose courses based on content. Excess information distracts from the main goal of the course - gaining skills or knowledge.