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Article

The Impact of Gamified Educational Marketing on Continuous Platform Usage: The Mediating Role of Reward Dependency

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Abstract

This study examines the impact of gamified educational marketing on continuous platform usage, with reward dependency acting as a mediating variable. The research focuses on Spanish users of gamified educational platforms such as Duolingo, Coursera, Udemy, Babbel, and Domestika. Drawing on Self-Determination Theory, Flow Theory, and Behavioral Reinforcement Theory, the study explores how reward-based mechanisms including points, badges, streaks, and leaderboards influence users' behavioral engagement and long-term platform retention. A quantitative research design was employed using a cross-sectional online survey distributed among users of gamified educational platforms in Spain. Data were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that gamified educational marketing significantly increases continuous platform usage and strongly contributes to reward dependency among users. Furthermore, reward dependency positively affects continuous platform usage and partially mediates the relationship between gamified educational marketing and user retention. The study highlights that while gamification effectively enhances engagement and platform continuity, it may also shift learners' motivation from intrinsic educational interest toward externally regulated reward-seeking behavior. These findings contribute theoretically and practically to gamification, educational marketing, and digital learning research.

Keywords: Educational Marketing, Reward Dependency, Continuous Platform Usage, Online Learning Platforms, User Engagement.

1. Introduction

The digital revolution of learning environments has dramatically altered the way learning platforms compete for and retain their learners. While pedagogical quality was sufficient to sustain users' interest in past learning platforms, many modern online platforms seek to integrate behavioral incentive mechanisms directly into the learning process itself, creating an overlap between the provision of education and its marketing promotion. In turn, this overlap has resulted in the emergence of a novel type of marketing strategy, gamified educational marketing, involving the utilization of game-derived reward mechanisms (points, badges, streaks, leaderboards, and achievements) as means of attracting new users and retaining their presence in online learning platforms. The underlying motives behind and implications of this phenomenon are, however, yet to be thoroughly studied and understood.

The proliferation of gamification practices across digital platforms has been extensively discussed. Koivisto and Hamari (2019) identified the exponential growth of gamification-related publications in the sphere of information systems and pointed out that motivational techniques originally designed to encourage entertainment have been increasingly leveraged to control users' behavior in non-game settings. Within the realm of education, meta-analyses have demonstrated that game-based reward mechanisms can improve learning engagement and, in some cases, lead to improved academic outcomes (Bai et al., 2020; Huang et al., 2020; Sailer & Homner, 2020). A closer look at the literature, however, reveals a key imbalance in these studies: while the focus is on learning outcomes as the main indicator of success, the effects of constant interaction with reward-driven interfaces on users' motivation towards the platform have been largely ignored. If gamification is used not only to facilitate the learning process but also to maintain users' loyalty to the platform, the psychological consequences of gamification need to be considered separately.

One of these consequences is reward dependency, a motivational condition characterized by the reliance on the receipt of rewards for sustaining engagement. This issue was raised in early critiques of gamification practices in education; in their review, Toda et al. (2017) argued that extrinsic reward systems would replace intrinsic motivation in gamified learning, fostering compulsive engagement patterns to satisfy the needs of continuous platform retention rather than learner development. It has also found confirmation in behavioral psychology, which states that reinforcement schedules produce habits that persist after the removal of the original motivational trigger (Klock et al., 2020). Nevertheless, the concept of reward dependency has not yet been formally operationalized and tested empirically as a mediating factor between gamified marketing design and continuous platform use.

This is an issue that carries practical importance. Theoretical discussions usually describe engagement with gamified platforms as a homogeneous phenomenon, while ignoring the potential evolution of motivational patterns during each use cycle, whereby they can become internalized or externalized through platform interaction. For example, Self-Determination Theory recognizes a distinction between autonomous motivation, which creates intrinsic engagement with a platform, and external regulation, which regulates this engagement by using external motivational incentives (Ryan & Deci, 2020). However, little attention has been dedicated to the ability of a gamified platform to affect the point on the motivational continuum at which a user operates. At the same time, there is a need for platforms functioning in intensely competitive markets, such as that of Spain, which saw an increase in digital education spending after the pandemic to find out if gamification helps create learning communities of the resilient type or dependent on external incentives.

Accordingly, the current study seeks to explore the role of gamified educational marketing as a predictor of continuous platform usage, with reward dependency playing the role of mediator. Users of Duolingo, Coursera, Udemy, Babbel, and Domestika from Spain are the most fitting candidates for answering this question because of their well-developed skills in gamified learning, as well as their willingness to switch platforms without incentive stimulation. Notably, the research literature on Spanish-speaking users usually investigates the effects of gamified educational marketing on the performance of users without paying much attention to its potential role in creating behavioral dependency.

There are several implications of this study. Firstly, it will define a new concept of reward dependency, which will serve as the mediator in predicting platform usage from the perspective of gamification. Secondly, it will allow bringing together two important concepts—Self-Determination Theory and Behavioral Reinforcement Theory—thus providing a holistic approach that will account for all the major aspects of gamification practices. Finally, it will provide empirical data on the continuous usage of platforms among Spanish-speaking users using Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology.

Thus, this study is motivated by the following research questions: (1) What is the significance of the impact of gamified educational marketing on continuous platform usage? (2) How do gamified educational marketing strategies contribute to forming reward dependency among users? (3) Does reward dependency mediate the relationship between gamified educational marketing and continuous platform usage?

2. Literature Review

The current research of gamification in digital learning environments is significantly different from the one conducted a decade ago: shifting from initial explorations of gamification concepts to increasing focus on empirical analysis. The foundational premise established by early scholars was that game mechanics incorporated into learning situations could spark similar motivational processes to those seen during leisure gameplay (Faiella & Ricciardi, 2015; Jang et al., 2015). However, along with more rigorous empirical research, the results produced have become more complex and revealed that the effects of gamification are highly conditional and varied.

According to scholarly syntheses, the existing meta-analyses usually find the presence of a positive relationship between gamification and educational engagement; however, the extent of such impact varies, depending on the gamification elements used, students' profiles, and assessment tools applied. For instance, a synthesis of 16 empirical studies conducted by Sailer and Homner (2020) found that gaming elements are associated with increased cognitive and affective engagement. In turn, Bai et al. (2020) combined the findings of more studies and concluded that gamification is the most effective way to promote education when implemented in structured instructional programs. Huang et al. (2020) further specified the conditions under which gamification has a positive impact on students' grades by demonstrating the importance of proper application and technology use. Thus, all of these sources point to the effectiveness and dependability of gamification in motivating learners, provided that the reward system corresponds to their motivations.

One of the most frequent themes raised in this research involves the motivational mechanisms involved in the use of gamification. According to Van Roy and Zaman (2019), gamification rewards create ambivalent motivations, satisfying needs for competence and relatedness while decreasing autonomous motivation as

long as rewards are experienced as externally controlled and non-voluntary. Such differentiation implies that gamification-based motivation might be less sustainable because external regulation of engagement leads to its discontinuation once rewards disappear. This assumption was confirmed by Bovermann and Bastiaens (2020), who discovered that certain gamification user profiles, such as achievers, tend to be more responsive to reward removal.

Marketing aspects of gamification have received comparatively less attention compared to its educational application, and yet the increasing number of publications on this topic in fields such as information systems and digital marketing suggests that there are gaps worth exploring. For instance, Bitrián et al. (2021) found that game features in mobile apps positively affect user engagement through mechanisms that go beyond intrinsic interest to include social comparison and the achievement drive. Following up on this trend, Paschmann et al. (2025) showed that gamification promotes habitual return and engagement in mobile applications via reward-based progression systems. In turn, Garaialde et al. (2021) revealed how gamified rewards strategically placed in the user interface promote repeated selection behaviors in ways largely unconscious. Overall, this research suggests that gamification in marketing settings operates via motivational as well as habitual processes—an idea that has been poorly accounted for in the field of education.

In the context of Massive Open Online Course (MOOC) continuance intention, research has developed separately and focused mainly on the theories of expectation confirmation and technology acceptance. Dai et al. (2020) adapted the former theory to analyze the process of MOOC continuation and found satisfaction and perceived usefulness to be key determinants. Later, Dai et al. (2024) elaborated on this research through meta-analysis, concluding that both cognitive and affective perceptions affect decision-making when it comes to continuing using MOOCs. Hassan et al. (2019) connected this stream of work to the concept of gamification by demonstrating that gamified rewards promoted continuance precisely through motivational feedback, i.e., by stimulating self-efficacy. However, no research to date has investigated whether such motivational feedback creates conditions for self-reinforcement in such a way that users' decisions about continuing to use MOOCs would depend solely on expected rewards rather than their perception of the utility of education received.

This gap in the literature is all the more pronounced when speaking about the issue of reward dependency. Although behavioral reinforcement frameworks have shown that reward contingencies contribute to habit formation in gamified learning settings (Klock et al., 2020; Oliveira et al., 2023), no study conducted to this day had operationalized reward dependency as a mediator in the relationship between gamification marketing in educational settings and continuance intention. Instead, relevant examples of this research can be found in the domain of gamified mobile apps without an educational purpose—in particular, the work by Aydınlıyurt et al. (2021), which shows how behavioral activation/inhibition systems modulate continuance intention in mobile apps through habitual processes. Likewise, Toda et al. (2017) proposed the idea that reward dependence may represent a "dark" aspect of gamification but failed to explore it empirically.

Based on the above discussion, one can formulate three main conclusions from the current literature review, which provide a justification for this research project. First, gamification successfully contributes to engagement and continuance but leaves room for exploration in terms of the mechanisms at play. Second, the presence of marketing in the design of gamified learning platforms generates new dynamics that require

research in the field of education. Finally, the Spanish online learning environment presents a practical opportunity to conduct relevant research because gamification is widely employed there, but there has yet to be any work done on the issue of behavioral dependency. The following section develops the theoretical framework and hypotheses for this study.

3. Theoretical Framework and Hypotheses Development

The current study constructs a comprehensive conceptual framework incorporating different theoretical frameworks to analyze gamified educational marketing and its impact. In particular, this study combines theories that are often analyzed independently: Self-Determination Theory, Flow Theory, and Behavioral Reinforcement Theory. The combination allows for a more detailed examination of the motivational process underlying gamified learning, facilitating the identification of unique aspects of gamified marketing that encourage reward-driven behaviors and continuous platform engagement.

In accordance with the definition offered by Ryan and Deci (2020), motivation can be classified as two distinct modalities placed on one continuum. Autonomous motivation is the type of motivation that originates from internal motives, including intrinsic interest, personal values, and feelings of competence. This type of motivation results in productive engagement and long-term motivation. On the contrary, external regulation is the type of motivation triggered by external factors such as rewards, punishment, and pressures to perform. External regulation can result in motivation, but it can also negatively affect autonomous motivation, thereby diminishing the quality of engagement and perseverance. When considering gamification within online learning spaces, Self-Determination Theory can offer a helpful interpretation of these concepts. Several empirical studies have shown that contexts satisfying the needs for autonomy, competence, and relatedness increase learners' engagement levels, while the focus on external rewards encourages them to seek external regulation (Van Roy & Zaman, 2019; Peng et al., 2012; Chiu, 2021). As a consequence, the current research extends the application of Self-Determination Theory to propose that gamified educational marketing, viewed as a means to promote behavior retention, creates motivation settings where the continuous receipt of rewards becomes the primary factor of platform use.

Flow Theory focuses on the emergence of the so-called flow states, highly immersive states of engagement that occur when task difficulty aligns with user ability. As shown by Huang et al. (2019), gamification in flipped learning contexts allows users to remain in flow conditions due to gradual increases in challenges that accompany users' growing competence. Similarly, Chen et al. (2020) demonstrated that gamified annotations improve reading outcomes via facilitating achievement progress and thus promoting immersion and engagement. Thus, gamification in educational platforms serves dual purposes, as it allows not only enhancing learning effectiveness but also promoting user engagement by means of reward-based systems of progress. Reward systems in gamified learning settings thus provide opportunities for sustaining continuous engagement.

The importance of reinforcement theories in the context of gamification needs to be highlighted as well. Specifically, operant conditioning theories state that variable-ratio reinforcement is a particularly powerful way of behavior modification. As pointed out by Klock et al. (2020), the implementation of personalized gamification strategies allows prolonging the engagement with an activity using these principles. Moreover, Aydınlıyurt et al. (2021) prove that gamification strategies are capable of producing reliable behavioral outcomes in mobile apps through using reinforcement techniques. Therefore, from a theoretical standpoint,

gamified learning marketing can help retain behavior via creating loops of reward anticipation related to marketing education goals.

As seen above, gamified educational marketing, platform use duration, and reward dependence form the conceptual model of the study, presented in Figure 1. Gamified educational marketing plays the role of an independent variable, platform use duration is a dependent one, and reward dependence acts as a mediator. In the following sections, theoretical bases of each relationship are discussed.

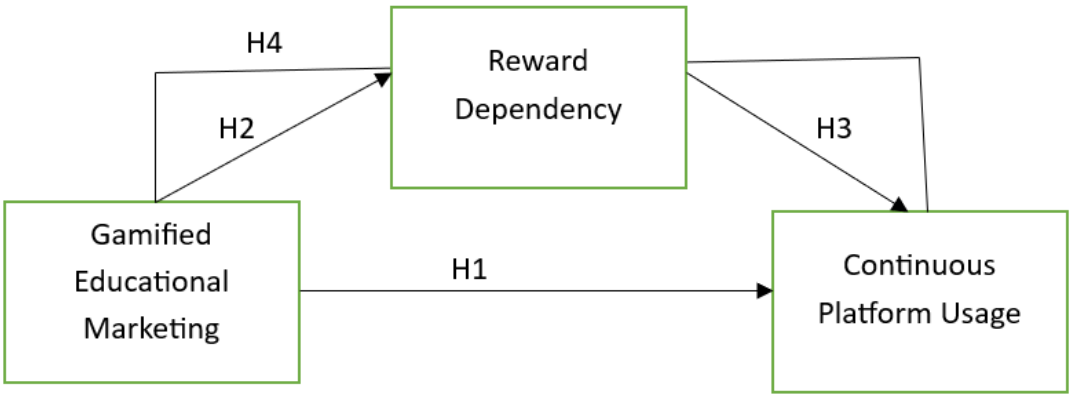

Figure 1: Research Model

3.1 Gamified Educational Marketing and Continuous Platform Usage

The assertion that gamified educational marketing creates direct effects on sustaining platform use is supported by convergent evidence drawn from the fields of educational technology and digital marketing studies. Gamification approaches involving reward systems, progress trackers, and social comparison foster the creation of an interactive experience in which sustained engagement becomes inherently satisfying beyond what the didactic material provides. In a study on gamification strategies used in mobile apps, Bitrián et al. (2021) found that gamification strategies functioned as substantial motivators for engagement via social identity formation and achievements tracking. In a meta-analysis on gamification and online learning, Yu et al. (2024) established that gamification techniques influenced positively the persistence of learners in engaging in online learning activities, with large effect sizes implying that gamification was among the most effective behavior manipulation tools available to platforms. Similarly, Ratinho and Martins (2023) noted that gamified learning approaches increased the engagement and motivation of learners at both secondary and tertiary levels of education. Under the Flow Theory perspective, these pieces of evidence imply that gamified educational marketing maintains conditions for immersive engagement that make platform visits satisfying.

H1: *Gamified educational marketing has a significant positive effect on continuous platform usage.*

3.2 Gamified Educational Marketing and Reward Dependency

This association stems from the principles put forward by Self-Determination Theory and Behavioral Reinforcement Theory. Since gamification strategies used in educational applications focus primarily on extrinsic motivators such as points, badges, streaks, and rankings on leaderboards, it follows that they employ regulatory mechanisms characteristic of external rather than autonomous motivation. Over time,

the user's motivation orientation might shift to the point where the primary driver for using an app becomes their expectation of receiving rewards rather than interest in learning per se. In this regard, Toda et al. (2017) viewed this pattern as one of the undesirable effects of gamification in educational contexts, as dependence on extrinsic motivation tends to diminish intrinsic motivation and produces contingent behavior. Smiderle et al. (2020) found that people with distinct personalities were more susceptible to such behavior dynamics, which means that certain users are more likely to become dependent on rewards offered by gamified platforms. Garaialde et al. (2021) observed that using carefully crafted rewards in the interface of an app could generate reward-based behavior of habitual returning to it, which seems to be a case of behavior conditioning leading to dependency. In other words, since gamified apps rely on retention as one of the marketing tools, it stands to reason that:

H2: *Gamified educational marketing has a significant positive effect on reward dependency.*

3.3 Reward Dependency and Continuous Platform Usage

The assumption that reward dependency positively influences future platform engagement can be justified based on principles of Behavioral Reinforcement Theory in relation to digital contexts of engagement. As users begin to rely on a motivational approach revolving around anticipated rewards, they engage with the platform not because of its educational value but due to the fact that it will provide them with expected incentives. The idea of rewarding digital behaviors to foster continuous engagement has been widely studied in gamification research, and Hassan et al. (2019) show that motivational feedback generated by gamified systems significantly improves benefits and future engagement since reward-based achievement tracking is a reliable behavioral motivator. Aydınlıyurt et al. (2021) also prove that behavioral activation systems based on reward expectation and approach motivations are strong predictors of the intention to continue using gamified tools. Similarly, according to Paschmann et al. (2025), habitual return behavior associated with gamified applications was maintained through the platform design based on reward progression. In relation to Self-Determination Theory principles, despite the fact that external regulation is motivationally inferior compared to autonomous motivation, it is able to sustain continued behaviors, especially in cases where rewards are delivered frequently and in a varied manner, as part of user interfaces.

H3: *Reward dependency has a significant positive effect on continuous platform usage.*

3.4 The Mediating Role of Reward Dependency

The hypothesis of mediation links the triad discussed above into a chain which can explain how gamification affects the behavior and actions of students. Gamification itself is considered to have only an indirect impact on the retention of educational platforms by influencing the user's motivation and thus shifting their mode of engagement from being intrinsically regulated to becoming reward-based, which helps maintain the use of the platform through continuous cycles of incentive anticipation. This concept is well-aligned with the findings by Krath et al. (2021), according to which the effects of engagement on users' behaviors and cognitions are often mediated by motivational processes not covered by the direct effect models. Similarly, the findings by Manzano-León et al. (2021) who conducted a literature synthesis on the topic revealed that the effects of engagement in gamified educational platforms depend largely on motivational states rather than on certain design elements. Hence, the suggested mediational chain can be seen as a valid theoretical framework for explaining the relationship between incentive-based gamification design and behavioral retention. It can be represented visually in Figure 1 and stated as follows:

H4: *Reward dependency mediates the relationship between gamified educational marketing and continuous platform usage.*

Indeed, the proposed framework of theories and hypotheses positions the present research at the crossroads of digital marketing, motivational psychology, and information system research areas. By developing a hypothesis-driven approach toward the conceptualization of reward dependency as a mediator variable within an elaborate theoretical framework, which makes use of Self-Determination Theory , Flow Theory, and Behavioral Reinforcement Theory among others, this study transcends prior researches concerning gamification that have considered motivational consequences as homogenous. The presented framework is, therefore, not only theoretical but also actionable by enabling designers and educational marketers to develop gamification approaches in such a manner that they maintain user engagement while avoiding dependency.

4. Methodology

4.1 Research Design and Approach

The research methodology used in this study is that of quantitative research design, based on the purpose of testing hypotheses generated from theories on the relationship between gamified marketing education, reward dependency, and continued platform usage. A deductive approach is followed where general theories are identified and then used as the basis for examining the structural relationships between the concepts in the research model. Quantitative research design is ideal for this study owing to the fact that the concepts under investigation are both psychological and behavioral in nature and are quantifiable using validated scales. Data is collected in a cross-sectional study at one time only using an online survey tool.

4.2 Research Context and Population

The investigation focuses on adult users of Spanish-language online educational platforms incorporating gamification elements into their UX design. Examples of the gamified platforms under consideration include Duolingo, Coursera, Udemy, Babbel, Domestika, and various gamified mobile educational apps using points, badges, streaks, leaderboards, achievements, and gamified progress measurement as part of their interfaces. Several arguments can be put forward as reasons for choosing Spain as a location for the research. First, since the onset of the coronavirus pandemic, there has been a notable increase in investments in digital education from both the state and private sectors, resulting in greater popularity of online educational platforms among Spanish youth. In addition, these gamified educational platforms have become an integral part of both formal and informal education among the target audience. Finally, the gamified platform provider market in Spain is highly competitive, with gamified marketing efforts used actively by all the players to ensure user retention. As such, conditions necessary for the development of reward dependency relationships between the platform providers and their users are met. At the same time, very little attention has been paid to Spanish speakers in similar studies.

4.3 Sampling Strategy and Sample Size

The purposive sampling strategy is applied as the core of sampling strategies used. In this case, this sampling technique is used because there is a need to have respondents who possess certain criteria in terms of experience: having played gamified educational platforms before; being current users of an online

learning system; and having the experience of using reward-based features of educational systems such as points, streaks, or achievement badges. In turn, random sampling could not assure the inclusion of such criteria, thus making purposive sampling the only feasible approach.

The data was collected using Google Forms, with settings enabled to prevent multiple responses from the same participant and requiring completion of all questions before submission. Consequently, the data contained no duplicate or incomplete responses, enhancing the quality of the collected data and increasing the reliability of the study's results.

The sample size targeted equals at least 427 responses. This number is calculated based on power analysis required to carry out structural equation modeling. As noted by Hair et al. (2019), when building structural models, it is important to have enough respondents that can allow obtaining stable parameter estimates. When referring to PLS-SEM, there is a recommendation to have a minimum of 10 cases for each indicator of the model block with the largest amount of indicators. At the same time, the current research involves a mediation model. For this reason, there are six indicators used for measuring each construct. In this context, 427 seems to be a suitable and conservative sample size. The survey form was distributed in multiple online resources, such as Spanish universities' student communities, LinkedIn learning groups, Facebook educational forums, Reddit communities focused on learning languages and skills, and Telegram/Discord study groups.

4.4 Measurement Instrument and Scale Development

Data was collected using an online, structured, self-administered questionnaire tailored for this study. The questionnaire consists of four parts: (1) a screening part that confirms the eligibility of the respondents through criteria relating to the use of gamified platforms; (2) a socio-demographic part, capturing information on age, gender, education level, and main gamified platform used by the respondent; (3) the main part that includes six reflective items measuring each construct (namely, gamified educational marketing, reward dependency, and continuous platform usage), built according to scale development guidelines and borrowing from other validated scales in gamification, digital marketing, and information systems literature; and (4) a part devoted to ethical consent and information about data processing.

As was stated earlier, all three constructs are measured using six reflective items per construct. These reflective items are taken from scales in line with prior literature on gamification, digital marketing, and information systems. The gamified educational marketing scale reflects respondents' perception of the existence and importance of the reward-based elements embedded in their main platform: for instance, point system, badges, streaks, leaderboards, and achievements. The reward dependency measure evaluates the dependence of continuous platform usage on reward, assessing such indicators as difficulties in leaving reward-based behavior cycle, increased engagement while dealing with rewards, and lower motivation without incentives. Finally, the continuous platform usage scale measures the intensity, frequency, and regularity of gamified platform use, as previously defined in technology adoption studies (Dai et al., 2020; Dai et al., 2024).

All the items use five-point Likert scales, ranging from 1 (Strongly disagree) to 5 (Strongly agree). This particular range of scale points is selected for its common use in studies involving education and digital behavioral factors, reliability in providing sufficient variation across items for non-experts, and suitability for the case of platform users who interact with gamification assessments online. All questionnaire items

are drafted in Spanish to ensure linguistic clarity to potential respondents, thereby reducing the risk of response distortion caused by language issues. Before the full questionnaire administration, the instrument undergoes peer review by two experts in gamification and digital marketing and pilot testing with a convenience sample of around 30 people.

4.5 Ethical Considerations

All data collection processes employed within this study comply with the relevant research ethics and data protection guidelines, including the General Data Protection Regulation (GDPR) of the European Union. Participants were provided with an informed consent document which explains the academic nature of the study, guarantees the voluntary nature of participation, and assures participants that no personal identification information is requested or stored during participation in the study. The questionnaire asks questions relevant to attitude constructs that need to be tested. Participants are not asked for any personal information such as their names, email addresses, institutional affiliations, and credentials for the platforms used. All data received from participants is stored securely on a password-protected server which is accessible to only the members of the research group. All data is kept until it is time according to institutional guidelines to delete the data. Participants are informed that they can leave the study whenever they want and that their personal information will not be sold to any third party entity mentioned in the study, whether platform owners or others.

5. Data Analysis and Results

5.1 Measurement Model Evaluation

An assessment of the measurement model was conducted prior to testing the structural relationships to verify the validity and reliability of the reflective constructs in the study framework. Following the principles set out by PLS-SEM, the assessment was aimed at verifying the indicator reliability, internal consistency reliability, and convergent validity using outer loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) (Hair et al., 2019; Sarstedt et al., 2021).

Table 1 shows that the outer loadings of all indicators exceeded the acceptable value of 0.70, varying from 0.720 to 0.876. Thus, the reliability of indicators can be considered satisfactory. According to Hair et al. (2019), if an indicator outer loading is larger than 0.70, it can be concluded that the indicator sufficiently reflects the variance of the related latent construct. Even though two indicators of the gamified educational marketing (GEM) construct (GEM2 = 0.722 and GEM5 = 0.720) had slightly lower values, the values were acceptable since overall construct reliability and AVE values exceeded the critical threshold. The highest loading was registered for RD2 (0.876), which means there was a strong relation between this item and the reward dependency (RD) construct.

Table 1: Measurement Model Assessment

Construct	Item	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Continuous Platform Usage (CPU)	CPU1	0.791	0.902	0.925	0.673
	CPU2	0.782			
	CPU3	0.840			
	CPU4	0.831			

	CPU5	0.848			
	CPU6	0.826			
Gamified Educational Marketing (GEM)	GEM1	0.784	0.871	0.903	0.609
	GEM2	0.722			
	GEM3	0.826			
	GEM4	0.835			
	GEM5	0.720			
	GEM6	0.788			
Reward Dependency (RD)	RD1	0.824	0.908	0.929	0.686
	RD2	0.876			
	RD3	0.796			
	RD4	0.865			
	RD5	0.802			
	RD6	0.802			

Internal consistency reliability appears to be good in all constructs in question. All Cronbach's alpha values varied from 0.871 to 0.908, exceeding the minimum threshold value of 0.70 set by Cronbach (1951). At the same time, all composite reliability values varied from 0.903 to 0.929, which confirms high reliability and consistency of the measurement scale. According to Hair et al. (2019), composite reliability is a more reliable measure compared to Cronbach's alpha because it considers the real outer loadings of the indicators.

The last quality to be verified for a reflective model was convergent validity. AVE values of all constructs varied from 0.609 to 0.686, thus exceeding the critical value of 0.50 suggested by Fornell and Larcker (1981). These findings prove that the construct explained more than 50% of variance in the respective indicators, which indicates good convergent validity. RD showed the best AVE result, which was 0.686. Thus, it can be assumed that the construct sufficiently explained variance among indicators. To sum up, based on the analysis in Table 1, one can conclude that satisfactory reliability and convergent validity have been achieved for all constructs in the study.

5.2 Discriminant Validity Assessment

Discriminant validity was considered to ensure that the constructs included in the model were empirically distinguishable from each other. Following modern guidelines for conducting variance-based structural equation modeling, the discriminant validity of constructs was established based on both Heterotrait-Monotrait Ratio (HTMT) and Fornell-Larcker criterion (Fornell & Larcker, 1981; Henseler et al., 2015).

Table 2: Discriminant Validity Assessment Using HTMT Criterion

Constructs	CPU	GEM	RD
CPU			
GEM	0.776		
RD	0.767	0.751	

As is seen from HTMT values presented in Table 2, all of them are under the conservative value of 0.90 suggested by Henseler et al. (2015). Namely, the HTMT values varied from 0.751 to 0.776, showing that

the constructs have good discriminant validity. The highest HTMT value (0.776) was registered between the constructs of Continuous Platform Usage (CPU) and GEM. The above result proves that the latent constructs included in the model represent different theoretical concepts.

Table 3: Discriminant Validity Assessment Using the Fornell–Larcker Criterion

Constructs	CPU	GEM	RD
CPU	**0.720**		
GEM	0.681	**0.680**	
RD	0.690	0.661	**0.728**

Further proof of the discriminant validity of constructs was obtained based on the Fornell-Larcker criterion. As can be seen from Table 3, the square roots of AVE of each construct were higher than their correlations with other constructs included in the model. Specifically, the diagonal AVE values for CPU (0.720), GEM (0.680), and RD (0.728) were larger than their respective inter-construct correlation coefficients. As Fornell and Larcker (1981) state, such a pattern demonstrates that each construct has stronger connections with its indicators than with any other construct included in the model. Thus, considering the HTMT and Fornell-Larcker criteria, discriminant validity of constructs can be confirmed. That is, the constructs included in the model are empirically distinguished from each other.

5.3 Collinearity and Model Fit Assessment

Before examining structural relations, the collinearity diagnostics as well as other fit indices were performed to ensure the statistical quality of the proposed PLS-SEM model. Specifically, collinearity diagnostics were particularly noted since multicollinearity may affect path coefficient estimates and the predictive capacity of the model (Kock, 2015).

Table 4: Collinearity Assessment Using Variance Inflation Factor (VIF)

Construct	Item	VIF	Construct	Item	VIF	Construct	Item	VIF
Continuous Platform Usage (CPU)	CPU1	1.994	**Gamified Educational Marketing (GEM)**	GEM1	1.889	**Reward Dependency (RD)**	RD1	2.284
	CPU2	1.896		GEM2	1.666		RD2	3.082
	CPU3	2.527		GEM3	2.104		RD3	2.135
	CPU4	2.287		GEM4	2.272		RD4	2.994
	CPU5	2.675		GEM5	1.606		RD5	2.110
	CPU6	2.612		GEM6	1.921		RD6	2.132

According to the results provided in Table 4, Variance Inflation Factor (VIF) values varied from 1.606 to 3.082. All VIF values were considerably lower than 5.0, which was recognized as the threshold level in relation to the PLS-SEM methodology (Hair et al., 2019; Kock, 2015). In this case, there is no evidence of collinearity between indicators in this study, which implies that structural estimates will not be affected by this problem. In addition, all indicators are independent and can be considered valid measures of the corresponding constructs. Specifically, the highest VIF value, 3.082, is associated with indicator RD2. However, its value still is not alarming in relation to model performance.

In turn, model fit indices such as the standardized root mean square residual (SRMR), normed fit index (NFI), d_ULS, d_G, and chi-square values were calculated to estimate the overall quality of the proposed PLS-SEM model. According to Table 5, SRMR values for both saturated and estimated models did not exceed 0.058, which is significantly lower than 0.08 and indicates the acceptability of model fit (Hair et al., 2019). The NFI was 0.860, which exceeds the acceptable threshold of 0.80.

Table 5: Model Fit Assessment

Model Fit Index	Saturated Model	Estimated Model	Recommended Threshold	Assessment
SRMR	0.058	0.058	< 0.08	Good Fit
d_ULS	0.577	0.577	Lower values indicate better fit	Acceptable
d_G	0.326	0.326	Lower values indicate better fit	Acceptable
Chi-square	179.970	179.970	Lower values preferred	Acceptable
NFI	0.860	0.860	> 0.80	Acceptable Fit

Furthermore, d_ULS and d_G values are low, which means that discrepancy between empirical and implied covariance matrices was insignificant. It is important to note that chi-square values cannot be used as an evidence of model adequacy in the PLS-SEM framework due to its sensitivity to sample sizes; however, the obtained chi-square value (179.970) can be considered acceptable. In summary, the results of collinearity and model fit indices suggest that the proposed model is statistically acceptable for further analysis.

5.4 Structural Model Assessment

After the measurement model analysis, the next phase involved analyzing the structural model to determine how well the proposed framework explained the relationship among the constructs and the size of the relationships. In line with the suggestions provided by Hair et al. (2019) and Sarstedt et al. (2021), this was done by assessing the coefficients of determination (R^2), adjusted R^2 values, and the effect sizes (f^2).

Based on the information in Table 6, the value of R^2 was determined to be 0.702 for CPU. This means that GEM and RD together explain 70.2% of the variance in users' continuous platform usage behavior. According to Hair et al. (2019), R^2 values of more than 0.67 may be viewed as representing substantial explanatory power in research conducted in behavioral and social sciences fields, which implies that the proposed model is strongly predictive of users' continuation behavior in relation to gamified educational platforms. Similarly, R^2 of 0.578 shows that GEM can explain 57.8% of the variance in reward dependency. This suggests moderate-to-substantial predictive power and reflects the importance of gamification marketing mechanisms in explaining users' reward-seeking behaviors.

Adjusting the R^2 values did not significantly alter the strength of the explanations, resulting in 0.695 and 0.574 for CPU and RD, respectively. As may be noticed, the small difference between the R^2 and adjusted R^2 values indicates model stability and highlights the fact that model explanatory power was not increased artificially due to the high number of predictors used in the model.

In addition to evaluating the model's explanatory power, the effect sizes (f^2) of the relationships between exogenous and endogenous constructs were assessed to evaluate the relative importance of the former in determining the latter. Specifically, based on Cohen's (1988) recommendations, f^2 of 0.02, 0.15, and 0.35

represent small, medium, and large effects, respectively. As seen in Table 6, the effect of GEM on CPU had f^2 equal to 0.259, suggesting medium effect size. Similarly, reward dependency was found to exhibit medium effect on CPU as its f^2 was also found to be equal to 0.305. It can therefore be concluded that the two exogenous constructs significantly influence the users' tendency to continue using a particular platform.

Table 6: Coefficient of Determination (R^2) and Effect Size (f^2)

Relationship / Construct	R^2	Adjusted R^2	f^2 Effect Size	Effect Size Interpretation
GEM to CPU	0.702	0.695	0.259	Medium
GEM to RD	0.578	0.574	1.372	Large
RD to CPU	0.702	0.695	0.305	Medium

However, the most significant effect size was observed for the relationship between gamified educational marketing and reward dependency. In this case, f^2 was calculated to be equal to 1.372, which is quite far beyond the level required for indicating a large effect size. This means that GEM has a dominant effect on users' RD behaviors, which is in agreement with the expectations outlined by the Behavioral Reinforcement Theory. It states that being constantly exposed to reward-based environments reinforces habitual behavioral responses in humans (Klock et al., 2020; Aydınlıyurt et al., 2021). Figure 2 depicts the results of the structural model analysis, showing the path coefficients, outer loadings, and R^2 values for the endogenous constructs.

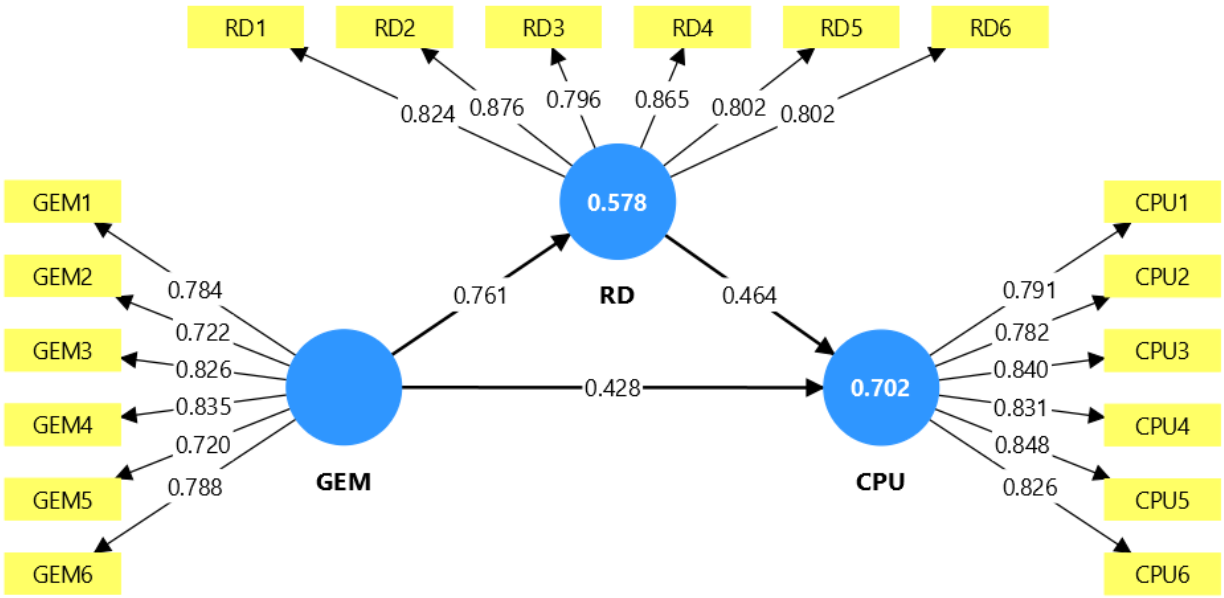

Figure 2: Structural Model Assessment Results

5.5 Hypotheses Testing

After validating the measurement and structural models, hypotheses were tested via bootstrapping techniques using PLS-SEM. Bootstrap is considered an excellent method for evaluating the significance of path coefficients since it is a robust non-parametric test procedure used primarily in mediation and complex behavioral models (Hair et al., 2019; Preacher & Hayes, 2008). Path coefficients (β), t-values, and p-values were employed in testing the significance of structural relationships.

Table 7 shows the results of hypothesis testing for the direct effects. The analysis indicates that GEM has a significant positive impact on CPU ($\beta = 0.428$, $t = 4.767$, $p < 0.001$), thus confirming H1. Based on the findings, one may conclude that gamified approaches in educational marketing have a considerable positive impact on the sustainability of user engagement with educational platforms. In accordance with prior research, it is evident that gamified marketing fosters user engagement and retention because it increases motivational immersion and enjoyment (Bitrián et al., 2021; Yu et al., 2024; Ratinho & Martins, 2023).

Besides, the analysis shows that GEM has a strong positive effect on RD ($\beta = 0.761$, $t = 18.933$, $p < 0.001$), thus confirming H2. Specifically, this relationship shows the strongest path coefficient among all others, pointing to its significant strength. Consistent with both Self-Determination Theory and Behavioral Reinforcement Theory, one may conclude that the exposure to external rewards leads to the development of externally regulated motivation (Ryan & Deci, 2020; Toda et al., 2017). Besides, this relationship supports previous research that highlights gamified interfaces as a means for developing habit formation through reinforcement processes (Garaialde et al., 2021; Paschmann et al., 2025).

Furthermore, RD significantly positively affects CPU ($\beta = 0.464$, $t = 5.037$, $p < 0.001$), thus confirming H3. This indicates that people who show greater dependency on reward-based mechanisms exhibit higher tendencies towards maintaining continuous engagement with educational platforms. This relationship fits Behavioral Reinforcement Theory according to which people develop continuance behaviors due to expected future rewards and reinforcement mechanisms (Aydınlıyurt et al., 2021; Hassan et al., 2019). Moreover, theoretically, this result indicates that intrinsic motivation for educational activities transforms into externally regulated continuance behavior due to gamified incentives.

Table 7: Direct Hypotheses Testing

Hypothesis	Path	Path Coefficient (β)	t-Value	p-Value	Decision
H1	GEM to CPU	0.428	4.767	0.000	Supported
H2	GEM to RD	0.761	18.933	0.000	Supported
H3	RD to CPU	0.464	5.037	0.000	Supported

In order to test the mediating effect of RD on the relationship between GEM and CPU, bootstrapping methods were used based on the recommendation of Preacher and Hayes (2008). As shown in Table 8, the indirect effect of GEM on CPU mediated by RD ($\beta = 0.353$, $t = 4.862$, $p < 0.001$) is statistically significant, thus supporting H4.

Therefore, RD partially mediates the association between GEM and CPU. Practically speaking, the results obtained indicate that GEM impacts continuance behavior both directly and indirectly by promoting reward-dependent motivational orientation. From the theoretical perspective, the above mediating effect offers insights into how gamification affects long-term behavior by encouraging dependency on externally motivated behavior.

Table 8: Mediation Hypothesis Testing

Hypothesis	Indirect Path	Indirect Effect (β)	t-Value	p-Value	Decision
H4	GEM to RD to CPU	0.353	4.862	0.000	Supported

In particular, the current mediation findings demonstrate the potential of gamification beyond the traditional conceptual models related to customer satisfaction, performance, or motivation outcomes (Bai et al., 2020; Sailer & Homner, 2020). Namely, RD emerges as a major mediating factor linking the design of GEM tools to the sustainability of customers' engagement behaviors. Moreover, the mediating effect found is in line with recent concerns about the dark side of gamification when excessive focus on rewarding mechanisms promotes dependency on external factors (Toda et al., 2017).

As illustrated in Figure 3, bootstrapping procedures confirm the statistical significance of all structural paths and indicator relations in the developed conceptual model. Taken together, these findings provide strong evidence for the proposed model that integrates Self-Determination Theory, Flow Theory, and Behavioral Reinforcement Theory within the scope of GEM and CPU.

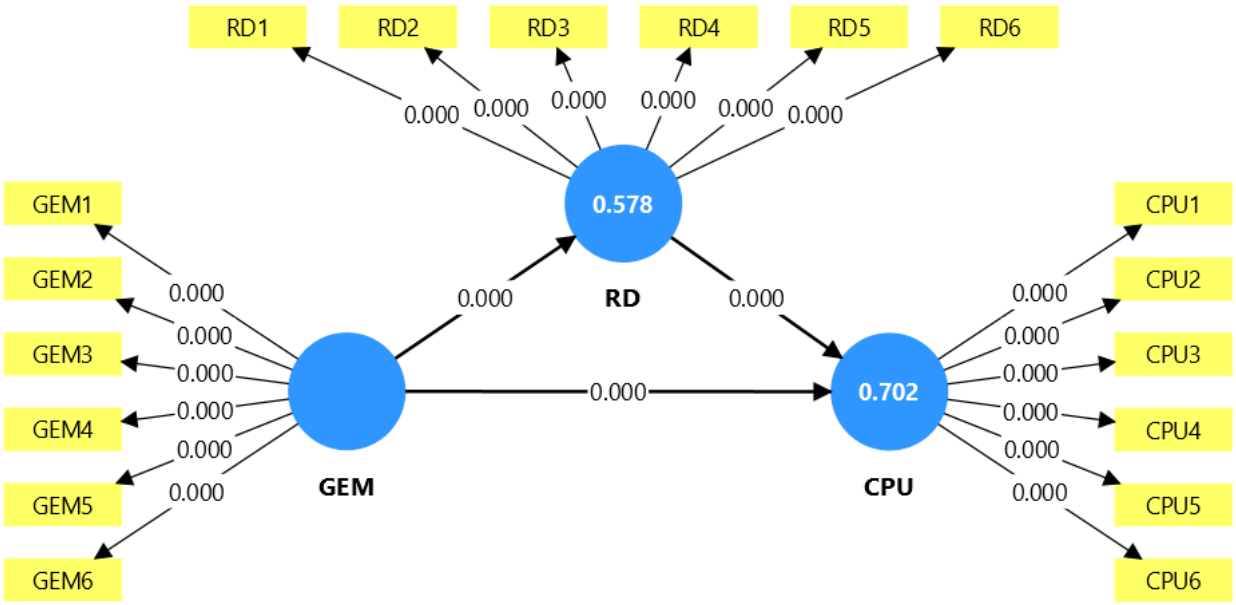

Figure 3: Bootstrapping *Results of the* Structural *Model*

6. Discussion

First and foremost, the results show how gamified educational marketing can contribute to creating an environment in which learners feel encouraged to come back to and spend time on a platform. The significant positive influence of gamified educational marketing on continuous platform usage shows that game-like marketing elements such as points, badges, streaks, leaderboards, and so on can do much more than merely enhance the appearance of learning. These findings are consistent with those provided in previous studies in gamification that demonstrated its potential in improving engagement, motivation, and persistence in online learning (Bai et al., 2020; Sailer & Homner, 2020; Yu et al., 2024). In addition, the findings are aligned with the studies in digital marketing and mobile apps that showed that gamified mechanisms could lead to repeat interaction through making the platform more enjoyable, social, and engaging (Bitrián et al., 2021; Hassan et al., 2019; Paschmann et al., 2025). According to the Flow Theory, gamified educational marketing could potentially allow achieving a flow-like experience of a continuous

chain of goals, feedback, and progression within the platform (Chen et al., 2020; Huang et al., 2019; Tsay et al., 2018).

Another interesting result to point out is the strong positive relationship between gamified educational marketing and reward dependency. This relationship had the highest path coefficient in the analysis and showed that gamification elements in education can affect motivation in the way of increasing users' reliance on external motivation. This finding gives additional credibility to the problems previously raised in gamification research about potential motivational cost caused by reward-based systems (Toda et al., 2017; Van Roy & Zaman, 2019; Ryan & Deci, 2020). Even though the gamified rewards may make users want to participate in educational activities on the platform initially, based on Self-Determination Theory, such a motivational pattern means that they would start to behave according to the externally regulated motivation rather than following the principle of autonomous motivation (Peng et al., 2012; Chiu, 2021; Ryan & Deci, 2020). Such an interpretation is consistent with Behavioral Reinforcement Theory that explains how reward dependency develops when users keep repeating behaviors to receive future rewards rather than learn something new (Klock et al., 2020; Aydınlıyurt et al., 2021; Garaialde et al., 2021).

Furthermore, the finding of positive correlation between reward dependency and continuous platform usage shows why users would stay on gamified learning platforms despite not being interested in learning itself. Specifically, gamified reward mechanisms can potentially become a behavioral pattern to sustain users' return through anticipation, habit, and reinforcement. This finding is aligned with previous research that found motivational feedback, quantification of progress, and reward-based achievements as factors that increase continued use of digital platforms (Hassan et al., 2019; Dai et al., 2020; Dai et al., 2024). This finding can also be consistent with studies conducted in the field of gamified mobile applications in which continuance intention was driven by approach motivation and reward dependency (Aydınlıyurt et al., 2021; Paschmann et al., 2025; Bitrián et al., 2021). On the other hand, it is important to note that while gamified rewards positively influence platform continuity, they might not mean that users stay because they feel interested in education per se but rather because the platform keeps providing incentives for them to do so (Toda et al., 2017; Bovermann & Bastiaens, 2020; Van Roy & Zaman, 2019).

Perhaps the most significant contribution that this study makes is that reward dependency mediates the relationship between gamified educational marketing and continuous platform usage. This result can add to the gamification literature beyond the notion of increased engagement by highlighting the potential motivational process through which it happens. While many previous studies showed that gamification could improve learning motivation and engagement, very few examined the possibility of forming reward dependency in this regard (Sailer & Homner, 2020; Zainuddin et al., 2020; Manzano-León et al., 2021). In contrast to this literature, the current study showed how gamified educational marketing can influence continuance both directly and through a reward-based motivation pathway. Furthermore, such a result is particularly valuable in the context of educational marketing since platform retention does not necessarily have to coincide with user learning (Klock et al., 2020; Krath et al., 2021; Oliveira et al., 2023).

To sum up, the findings of the study provide some reasons to integrate the principles of Self-Determination, Flow, and Behavioral Reinforcement Theories in gamified educational platform design. In particular, Flow Theory explains what allows users to have fun and enjoy gamified features in the beginning, while the Self-Determination Theory describes how motivational conflict is formed in such a context. Finally, Behavioral Reinforcement Theory describes how repeated reinforcements can turn such behavior into a habit (Ryan &

Deci, 2020; Huang et al., 2019; Klock et al., 2020). Therefore, the result of the current study implies that gamification is neither harmful nor beneficial but has a lot of possibilities depending on how rewards are used in gamification and how often they occur (Liu et al., 2017; Koivisto & Hamari, 2019; Sailer et al., 2021). Consequently, gamified platforms in education should balance gamification, autonomy, progress, and educational goals (Chiu, 2021; Van Roy & Zaman, 2019; Yu et al., 2024).

7. Conclusion

The current research revealed that gamified marketing positively affected continuous user interaction with educational platforms in Spanish language. Additionally, gamified marketing was found to foster reward dependency among users of online education platforms in Spanish language, thereby partially mediating the effect on continued platform use. The developed model demonstrated high explanatory power, accounting for 70.2% of continuous platform usage variance and 57.8% of reward dependency variance. Overall, these findings confirmed the hypothesis that gamified marketing can be considered both an engagement tool and a behavioral conditioning mechanism capable of influencing user behavior through externally controlled motivational processes.

Theoretically, this study contributes to gamification research because it moves away from the predominant theories on user engagement that focus on involvement, satisfaction, or achievements. Where previous studies would rely on either Self-Determination Theory to explain how motivations drive gamified behaviors or on Behavioral Reinforcement Theory to explain how habits are formed through rewards, the current study combines both approaches. This combination highlights the fact that gamified marketing education increases engagement among users via motivational means but turns such engagement into habits through behavioral reinforcements. Hence, the findings of the research provide a broader explanation of continuance behavior by proposing that reward dependency mediates between the motivation driven by external regulations and continuance behavior of using the platform. Consequently, the study makes an important contribution to gamification by moving away from the traditional views on user engagement and providing insights into both positive and negative implications of rewards-driven gamification practices.

The present study contributed to the field of gamification by providing empirical evidence of the reward dependency mechanism. Previous literature on gamification primarily paid attention to engagement and learning effects of the implementation of gaming components in various settings. By contrast, this study introduced the concept of reward dependency as an intermediate step between the initial engagement and continued behavior. Thus, this research filled a significant gap in the previous research by investigating a specific psychological mechanism that mediates the process of continuance intention development after engagement. Secondly, this research provided an integrative theoretical explanation for the observed phenomenon, incorporating multiple theories of motivation and learning to form a unified perspective. In particular, this study showed that the process of engaging in gamified platforms can be considered a combination of immersion, externally regulated motivation, and behavioral conditioning. Thirdly, this research extended the knowledge about gamification to the context of Spanish-speaking users of online educational platforms, which had not been widely explored before despite numerous contributions to gamification literature made by researchers in North America and East Asia (Ryan & Deci, 2020; Klock et al., 2020; Koivisto & Hamari, 2019).

There are several practical implications that might be drawn based on the results of this study. The results suggest that gamified educational marketing is a powerful way to increase engagement and promote continuous user interaction with the platforms offering gamified features. At the same time, the findings indicate that gamification should be used prudently in order not to create dependence on the incentives used in the design of the marketing campaigns. Thus, it can be recommended that educational platforms and their marketing departments develop approaches to gamifying the user interaction experience that would encourage repeated participation and foster autonomy, competence, and intrinsic motivation. From the practical viewpoint, this recommendation might be implemented by combining achievement rewards with individualized learning tracks, personalized goal-setting activities, collaborative interactions, and constructive feedback related to learning outcomes.

However, the present study has some limitations that should be taken into account when evaluating its results. To begin with, the cross-sectional nature of this research did not allow identifying any causal relations in the development of motivational orientations over time. For instance, a longitudinal study can help investigate how reward dependency develops as a result of interaction with a gamified educational platform. Additionally, the sample was limited to Spanish language users, which means that the conclusions cannot be readily generalized to the international context. Future research should address cross-cultural differences in the gamified experience and evaluate their impact on users' motivational orientations. Moreover, there may be other psychological constructs apart from reward dependency that mediate the relationship between engagement and continuance behavior. For example, one could examine the role played by perceived enjoyment, intrinsic motivation, habitual use, affective attachment, and satisfaction of learning needs as mediating or moderating variables. Finally, future research might investigate the behavioral patterns in gamified environments different from educational platforms.

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