

The Impact of Gamification on Consumer Engagement with Brands: Empirical Evidence

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Abstract

This study investigates the impact of gamification on consumer brand engagement among Portuguese gamers, addressing a significant gap in empirical research within this demographic. While gamification is known for enhancing brand engagement and loyalty, limited evidence exists in the Portuguese market. Using a quantitative approach, data were collected from 485 Portuguese gamers and analyzed through covariance-based structural equation modeling. The research examines how three dimensions of gamification - immersion, realization, and social interaction - affect components of consumer brand engagement, specifically absorption, affection, and social connection. Findings indicate that immersion significantly enhances all three engagement components. At the same time, realization and social interaction are positively linked with identification and social connection, underscoring the strategic potential of gamification in brand management. This study offers new empirical insights into the Portuguese market, demonstrating that gamification can be a powerful tool for marketers aiming to strengthen consumer-brand connections and loyalty. By addressing an underexplored

area, this research provides practical recommendations for integrating gamification into marketing strategies to drive organizational success.

Keywords - Gamification, Consumer Brand Engagement, Marketing, Portuguese Gamers.

Introduction

Technological progress has transformed societies, impacting habits, processes, and social networks. Amid these changes, the enduring human quest for entertainment persists, notably in the global surge of video gaming. Millions engage in gaming across various platforms, transcending demographics and influencing the corporate sphere, particularly with the rise of mobile gaming, iGaming, and esports (AEPDV). Esports, defined as competitive gaming, have gained mainstream popularity, drawing online audiences for live viewing and interactive engagement (Bossom and Dunning). This industry's reach extends beyond gaming, influencing contexts like Gamification.

Gamification involves integrating game elements into non-gaming environments, spanning education, health, sustainability, productivity, and sales. The global gamification market reaches €16.61 billion (USD\$18.05 billion) in 2023 (Markets). As companies increasingly implement gamification, especially in seemingly mundane yet essential tasks, it has proven effective in engaging consumers, driving website traffic, online sales, page views, social media shares, and overall brand interaction (Werbach and Hunter).

Aligned with the practical concept of consumer brand engagement, gamification aims to create meaningful connections with consumers, fostering rational and emotional

ties that lead to brand loyalty over time. The utilization of gamification, coupled with technological drivers such as Artificial Intelligence (AI), Augmented Reality (AR), and Virtual Reality (VR), reflects a strategic approach embraced by brands to captivate consumers within immersive realms, including the emerging Metaverse (Thomas et al.; Dwivedi et al.).

Despite its advantages, gamification faces skepticism among executives who may view it as frivolous. However, it transcends simple entertainment or marketing strategy; it is a complex process requiring careful study, defined objectives, and an understanding of the targeted player demographics for successful implementation and positive outcomes, especially in marketing. This study explores the application of gamification as a marketing tool. This topic is gaining more and more strength but is still underexplored, particularly in the Portuguese market and with gamers' perspectives regarding using gaming tools in new contexts. The Portuguese gaming market, poised to surpass €365 million in revenue and outpace industries such as cinema and music, comprises 80 companies, with projections exceeding 3 million players by 2027 (Almeida). Existing studies on gamification in Portugal have primarily centered around educational contexts, and its applications in organizational settings, such as motivational and productivity enhancements, are gaining prominence (Pereira and Gomes; Queirós and Pinto). As the studies point out (Lopes, Gomes, Lopes, et al.; Lopes, Gomes, Santos, et al.), more studies need to be carried out to understand how different demographic groups in Portugal respond to these strategies and how previous experiences with games can affect their perceptions. This article aims to analyze Gamification's influence on Consumer Brand Engagement and the extent to which consumers perceive it in the Portuguese market. This study specifically investigates the impact of immersion, realization, and social interaction

dimensions in gamification on consumer brand engagement dimensions (absorption, affection, identification, and social connection), aiming to clarify which dimensions have the most significant influence among Portuguese gamers. Therefore, it is intended to answer the following question: What is the impact of Gamification on Consumer Brand Engagement? This study addresses a contemporary and compelling theme, given the growth of gamification strategies and the rapid evolution of the video game market—one of the most dynamic within creative industries. By offering new insights into the current perspectives of the Portuguese market, this research aims to guide brands in adapting their strategies to meet the evolving demands of consumers, most of whom are active gamers shaped by the transformative progression of gaming benefits beyond mere entertainment.

In pursuit of this objective, the ensuing sections of this article unfold in a structured manner. Following the introduction, a comprehensive literature review on gamification and consumer brand engagement is presented, scrutinizing the reciprocal influence between these two constructs. Subsequently, the methodology employed in this study is expounded upon. The results section encompasses a meticulous statistical analysis, while the ensuing discussion section augments this analysis by contextualizing the findings within the framework established by the extant literature. Followed by conclusive remarks encapsulating the critical insights derived from the study. Ultimately, the article concludes with the study's implications and presents suggestions for future research endeavors.

Literature Review

Gamification

The surge in video game users has transformed gaming into a recognized sport, gaining

prominence in global markets. Gamification, an emerging trend, integrates gaming tools into various fields like education, travel, and consumer behavior studies. Its primary aim is customer retention through innovative marketing strategies (Gatautis et al.), fostering emotional connections between brands and audiences (Xi and Hamari).

Video games market

Video games, integral to digital culture, influence education, social interactions, and entertainment, shaping current consumption patterns (Crawford). The term encompasses electronic image manipulation within rule-based systems (Caillois; Juul; Salen and Zimmerman). The evolution of video games, from Pong in 1973 to 3D modeling and virtual reality, highlights their cultural significance (Hansen; Mäyrä). The gaming industry's transformation, driven by technology and multiplayer gaming, reshaped global competition dynamics (Zhouxiang). The video game market encompasses a vast industry that creates, develops, and distributes various gaming products across different platforms. While gamification differs from creating entertainment games or virtual worlds, it draws insights from video game mechanics to enhance engagement and learning experiences (Werbach and Hunter). Understanding the dynamics of the video game industry is crucial, given its influence on global economies and, notably, its impact on the Portuguese market.

In 2022, the global video game industry amassed revenues exceeding 347 billion US dollars, with mobile games alone contributing significantly (Clement). With over 3 billion active gamers globally, the popularity of video games spans across demographics, with a slight male majority (Howarth). Notably, Europe accounts for a significant portion of global gaming revenues, with mobile games dominating the market. The video game industry has seen remarkable growth in Portugal, surpassing traditional entertainment

sectors like film and music (Almeida). With mobile games leading the market, the number of players has steadily increased, particularly among young adults. Mobile gaming, online gambling, and esports have transformed the landscape, prompting initiatives like the Portuguese Association of Video Game Producers to support local developers and attract international interest (Almeida). Understanding the perspective of gamers is essential, considering the societal and economic impact of gaming beyond entertainment. This study aims to explore gamification strategies from the viewpoint of active players, offering insights into consumer engagement within the dynamic Portuguese market.

Gamification applications

Gamification, rooted in gaming mechanisms, applies these tools outside gaming contexts (Stieglitz et al.). Coined by Nick Pelling in 2003, the term regained meaning in 2010, referring to applying gaming tools in non-gaming situations (Shannon). Zichermann and Linder Through Rewards, Challenges, and Contests) defines it as "unaware," transforming customer interactions into games for commercial purposes. Marczewski defines Gamification as applying game metaphors to real-life tasks to influence behavior, improve motivation, and enhance engagement.

In marketing, health, education, and websites, gamification harnesses pleasure from gaming experiences, increasing their desirability. It aligns with severe games and augmented reality but remains distinct. Gamification optimizes strategies for understanding objectives, creating scenarios, and fostering innovation (Zichermann and Linder).

In brand-consumer relationships, Gamification enhances interaction, particularly with younger audiences, fostering engagement in online content. It helps brands maintain

appealing content, employ meaningful incentives, personalize experiences, dominate global markets, create continuous learning opportunities, and monitor consumer loyalty (Zichermann and Linder).

Gamification is a multifaceted strategy that goes beyond maintaining or increasing brand engagement. It ensures content remains appealing, incorporates significant incentives, enables personalization, secures global market dominance, facilitates continuous learning, and monitors consumer loyalty (Zichermann and Linder). This approach provides a comprehensive framework for engaging and motivating diverse audiences and fostering innovation in customers, interest communities, or employees (Burke). To delve into the essence of Gamification, it is crucial to understand its three pivotal components: game elements, game-design techniques, and non-game contexts.

Gamification components

Essential tools for Gamification are game elements extracted from gaming environments and applied in novel contexts. Werbach and Hunter propose starting the Gamification process by considering game dynamics, mechanics, and components. The shape of a pyramid underlines the importance of combining these elements to achieve predetermined goals (Guo, Yuan and Yue; Paixão and Cordeiro). Acting as a game designer in the context of Gamification does not involve creating games but understanding the purpose of each element and how players perceive and interact with them. Game design techniques make gamified systems enjoyable, addictive, challenging, and resonant. Design thinking techniques, such as "Gamification design frameworks," guide the implementation of positive gamified systems. Key steps include defining business goals, outlining target behaviors, describing players, developing activity cycles,

prioritizing fun, and implementing appropriate tools (Paixão and Cordeiro; Schöbel, Janson and Söllner; Werbach and Hunter).

Extending beyond the gaming realm, Gamification enhances real-world and physical experiences through learning and game elements. The challenge lies in effectively implementing game elements in real-world contexts, whether internal, external, or related to behavior change (Werbach and Hunter). The focus is on engaging players in real-world objectives. Gamification emerges as a versatile brand strategy, incorporating game elements, game-design techniques, and non-game contexts to enhance engagement, motivation, and innovation across diverse audiences.

Dimensions of Gamification

Gamification operates within three primary dimensions: Immersion, Achievement, and Social Interaction (Yee, 2006b; Hamari et al., 2014; Xi & Hamari, 2020). These dimensions capture deep involvement, a sense of accomplishment, and social connections within gamified experiences.

Initially introduced by Yee, these dimensions stem from an empirical model of player motivations, identifying ten subcomponents grouped into three overarching components: Achievement, Social, and Immersion. Subsequent studies extended this exploration, highlighting the importance of these dimensions in understanding player engagement and motivations (Hamari, Koivisto and Sarsa; Xi and Hamari).

Immersion involves the player's deep involvement in the gaming environment, facilitated by mechanisms such as avatars, narratives, and virtual worlds (Yee). Achievement fosters a sense of accomplishment and progress through in-game achievements and milestones, driving player motivation. Social Interaction encompasses

the social connections and interactions within gaming communities, contributing to a sense of belonging and satisfaction (Hamari, Koivisto and Sarsa; Xi and Hamari).

Recent research extends the exploration of these dimensions to brand engagement, revealing their role in fostering relationships between consumers and brands in virtual contexts (Xi and Hamari). As explained below, understanding these dimensions is essential to designing compelling gamified experiences that boost engagement and promote meaningful connections between brands and consumers.

Consumer Brand Engagement

The term 'Engagement' lacks a single definition among authors (Abdul-Ghani, Hyde and Marshall; Brodie, Hollebeek, et al.; Brodie, Ilic, et al.; Maslowska, Malthouse and Collinger; Ndhlovu and Maree). However, it generally refers to diverse consumer reactions to marketing communications, impacting minds, brand interactions, and emotional investments (Abdul-Ghani, Hyde and Marshall). Definitions can be grouped into psychological and behavioral categories (Maslowska, Malthouse and Collinger). For Higgins and Scholer, Engagement is a state of complete absorption or consumption, a continuous state of attention. Engagement involves an individual (the committed entity) with a partner (the object of commitment). Some see Consumer Engagement as multidimensional, encompassing affective/emotional, cognitive, and behavioral dimensions, playing a central role in relational exchanges (Brodie, Ilic, et al.; Dessart, Veloutsou and Morgan-Thomas; Hollebeek, Glynn and Brodie). Conversely, some authors (Brodie, Hollebeek, et al.; Hollebeek; Vivek et al.) see Customer Engagement as a psychological state from co-creating consumer experiences with brand activities beyond purchases, often involving social networks. However, Ndhlovu and Maree define

Consumer Engagement as the synthesis of these two, being a consumer's psychological state and behavioral manifestations through value co-creation.

Enhancing Customer Brand Engagement attention retains customers/consumers, increases sales, provides a competitive advantage, and boosts profitability (Ndhlovu and Maree). Engaged consumers invest time, energy, money, and resources in the brand beyond the purchase and usage period (Keller and Swaminathan). This consumer focus has escalated due to technological advancements, especially the Internet and social media, fostering connectivity and interactions between users and brands (Abdul-Ghani, Hyde and Marshall; Keller and Swaminathan).

Authors Brodie et al. and Hollebeek emphasize three dimensions of Consumer Brand Engagement – cognitive, emotional, and behavioral. Dessart, Veloutsou and Morgan-Thomas enhanced this research, proposing a new conceptualization of multidimensional Engagement, presenting seven sub-dimensions to understand the main dimensions – Enthusiasm and Pleasure (for the Affective dimension), Attention and Absorption (for the Cognitive dimension), and, lastly, Sharing, Learning, and Endorsing (for the Behavioral dimension).

Vivek et al. introduced a new validated scale for measuring Customer Brand Engagement, incorporating dimensions such as conscious attention, enthused participation, and social connection. This scale addresses interactions, relationships, and social networks through behavioral manifestations in brand relationships. The authors concluded that consumer engagement extends beyond high-involvement products to generalized categories, and they aim for this scale to be applied in different contexts, emphasizing the importance of building relationships with potential customers.



In a more recent approach, Ndhlovu and Maree presented two scales for Consumer Brand Engagement in the context of product and service brands, improving previous studies. In this new approach, two dimensions are presented in the product context (using the smartphone product) – affection and rational behavior. Regarding the service context (presented through social media), four dimensions are exposed – affection, identification, absorption, and social connection (Absorption, Identification, Affection, Social Connection). The authors concluded that these scales provide excellent stability and adaptability in measurements for use in different contexts, aiming to assist brand engagement strategic plans focused on products and services. However, the study was conducted in an African context and not in a Western context, highlighting a lack of studies in Western contexts (Vitkauskaite and Gatautis; Jang, Kitchen and Kim; Xi and Hamari). This study is relevant due to its comprehensive approach and its adaptability to the Western context, which is lacking in the literature. It offers a more accurate and up-to-date model of the components of Consumer Brand Involvement in technological services contexts, which is of interest to the authors. According to Ndhlovu and Maree, it is possible to contribute to the positive formulation of Consumer Brand Engagement through the following dimensions. The Social Connection dimension represents the participation of connected and networked consumers in co-creating value in specific brand interactions, as many consumers do not engage without the initial perception of other consumers (Vivek et al.). Additionally, this interaction can refer to both online and offline contexts (So et al., 2014), as it is associated with a single moment during or related to brand activities (Hollebeek et al., 2019). The Affection dimension targets consumers' positive feelings toward brands in a focal relationship with specific interactions (Hollebeek et al., 2014). These feelings lead to increased emotional involvement and

brand loyalty. The Identification dimension measures the extent to which consumers perceive themselves as belonging to the brand (So et al., 2014). For example, this idea is also understood as integration into brand communities. Author Schaefer (2023) states that consumers present in communities do not require involvement in intrusive advertising and marketing actions but rather new positive experiences. These experiences result in brand differentiation, market relevance, and loyalty (Hyken, 2023). Finally, the Absorption dimension determines a state of deep immersion by the consumer, with total concentration to the point of losing temporal awareness during interaction and intrinsic satisfaction as the object of commitment (Dessart et al., 2016; So et al., 2014).

In synthesizing the various dimensions of Consumer Brand Engagement, we have revealed the complex interaction between consumers and brands, highlighting the importance of emotional connections, cognitive absorption, and behavioral manifestations. As consumers increasingly invest their time and resources beyond mere transactions, understanding these dimensions becomes imperative for brands seeking to foster lasting relationships and cultivate brand loyalty. By delving into the nuances of Consumer Brand Engagement, our study aims to shed light on the evolving dynamics of brand-consumer interactions, paving the way for more effective brand engagement strategies in an ever-changing market and understanding the influence of gamification on this process, as explained below.

The impact of gamification on consumer brand engagement

Gamification is harnessed to generate enthusiasm and emotional experiences, amplifying Experiential Marketing strategies. Research indicates that emotionally connected consumers contribute to a 306% increase in Customer Lifetime Value (CLV) through

engaging and memorable brand experiences (Frery, 2019). This sentiment extends to gamified post-purchase engagements, as evidenced by Prakkat (2022). Metrics reveal that implementing Gamification strategies results in a 47% boost in engagement, a 22% increase in brand loyalty, and a 15% rise in brand awareness (CoMarch, 2023). The potential of Gamification to foster emotional connections and natural consumer experiences translates into a revenue increase of 6 to 10% for brands (Abraham et al., 2017; Hansen, 2022). UK-based studies on Gamification's impact on Consumer and Brand Engagement show that over 60% of consumers engaging with gamified elements are more inclined to purchase that brand, potentially rising to 86% among consumers with prior Gamification experiences (ReflectDigital, n.d.).

Strengthening consumer relationships through Gamification can enhance loyalty and brand awareness, although contextual considerations are crucial. Gatautis et al. (2016), in their quantitative study on Gamification's role in Consumer Brand Engagement in Lithuania, found a positive but weak relationship. Consumers did not strongly associate gamified experiences with specific brands, emphasizing a stronger connection with gamified activities linked to collaboration and status attainment. A subsequent reassessment in 2018 yielded similar results, prompting the need for further research across different cultures, player types, and Gamification levels (Vitkauskaite & Gatautis, 2018).

Syrjälä et al. (2020) highlight that most Gamification studies focus on Consumer Engagement as the anticipated psychological outcome of this strategy. Their consumer-centric research on the benefits of Gamification and Consumer Brand Engagement in food packaging suggests that Gamification can enhance the iterative nature of Consumer



Brand Engagement, particularly in daily life, with positive functional and educational benefits.

In Sangroya et al.'s (2021) study on two gamified mobile applications, a positive association was found between forms of brand engagement and emotional involvement, strengthening the relationship between consumers and brands. Thus, the literature shows a positive relationship between gamification and consumer involvement with the brand in various activities, promoting emotional connections and consumer loyalty. However, there is a notable gap in studies exploring this relationship in new contexts, namely in the Portuguese population, through the perceptions of gamers, which this study aims to fill, thus presenting the bases and their due for the following hypotheses.

Research suggests that Gamification positively influences consumer behavior toward brands (Jang et al., 2018; Karać & Stabauer, 2017), providing unique and value-driven experiences (Sangroya et al., 2021). It fosters customer loyalty (Syrjala et al., 2020) and increases website traffic, online purchases, and social media shares, among other vital brand-related factors.

Players' immersion in gaming mechanisms involves creating avatars similar to reality or aspirational imaginings, focusing players through narrative-driven actions (Koivisto & Hamari, 2019). This immersion is directly linked to Consumer Brand Engagement (CBE), as consumers become completely absorbed, losing track of time within the game (Ndhlovu & Maree, 2022; So et al., 2014). Player immersion promotes a solid emotional connection with the brand, fostering a profound experience and a positive relationship (Ndhlovu & Maree, 2022), shared constantly in social communities (Xi & Hamari, 2020). Based on the explained arguments, the first hypothesis is stated:



H1. The immersion dimension (related to Gamification) positively influences absorption (H1), affection (H1a), identification (H1b), and social connection (H1c) (related to consumer brand engagement).

Achievement feelings in gaming mechanisms arise from challenges, missions, and leaderboards, providing consumers with a sense of presence and value in brands (Vitkauskaite & Gatautis, 2018). Achievement is tied to a sense of belonging to the brand, focusing consumers' energy on a common goal. Gamification achievements can influence other CBE dimensions, such as affection, identification, and social connections. Due to the background of the literature, the second research hypothesis is formulated:

H2. The achievement dimension (related to Gamification) positively influences absorption (H2), affection (H2a), identification (H2b), and social connection (H2c) (related to consumer brand engagement).

Social interaction in Gamification involves cooperation, collaboration, and praise, bringing users together on a social platform and enhancing their experiences (Hamari et al., 2014; Koivisto & Hamari, 2019). This social interaction positively influences brand-related connections, aiming for value co-creation and the presence of brand communities (Shaefer, 2023). Social interaction in Gamification can affect consumer engagement by deepening feelings of competition, teamwork, and using social tools. In light of the literature context, the research hypothesis number three is articulated:

H3. The social interaction dimension (related to Gamification) positively influences absorption (H3), affection (H3a), identification (H3b), and social connection (H3c) (related to consumer brand engagement).

Lastly, understanding consumers' previous experiences with Gamification and video games is essential for studying possible relationships between variables

(Vitkauskaite & Gatautis, 2018; Xi & Hamari, 2020; Yee et al., 2012). Exploring these experiences is crucial in the Portuguese context to identify current consumer types in the rapidly advancing technological landscape. Demographic aspects and previous experiences with Gamification and video games are considered control variables in the analysis.

Methodology

Population and sample

The target population for this study is Portuguese gamers over the age of 18 who are residents of Portugal, and the sample consisted of 485 of these individuals. The non-probabilistic convenience sampling method was used to collect the data due to the ease of access to sample members and the associated low cost. The choice of this method is also justified by the fact that Portuguese gamers are difficult to identify by their preferences.

Conceptual framework

Figure 1 shows the conceptual model, characterized by an independent variable—the dimensions of gamification—and, as a dependent variable, consumer brand engagement. Through its dimensions, it is possible to observe the relationship between the different dimensions of gamification and their influence on building consumer brand engagement.



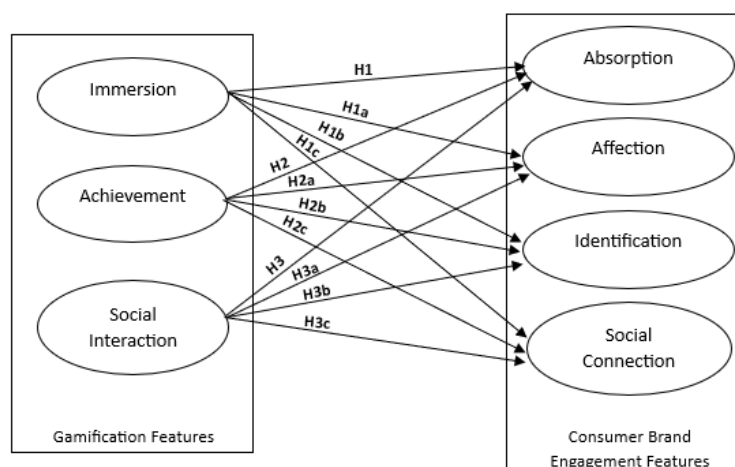


Figure 1. Conceptual Model

Source(s): Own elaboration

Measuring instruments

The measuring instrument used in this study was a questionnaire survey that was divided into three parts. The first part addresses twenty-six gamification features that were discerned, with specific categorizations. Avatar/virtual identity/profile, customization/personalization features, and narrative/story fall under immersion-related features. Features such as badges/medals/trophies, virtual currency/coins, points/score/experience points, status bar/progress, level, leaderboards/rankings/high score lists, and increasingly complex tasks are classified as achievement-related features. Additionally, team, social competition, and social network features are identified as social interaction-related features. We measured all these items using a 5-point importance level ranging from 1 (not at all important) to 5 (extremely important).

The second part, related to consumer brand engagement, includes twenty items to validate consumers' engagement through absorption, affection, identification, and social

connection with brands. We measured these dimensions using a 5-point level of agreement, ranging from 1 (strongly disagree) to 5 (strongly agree). Finally, there is some socio-demographic data on the participants (gender, age, nationality, professional situation, education, gamer habits, and familiarity with gamified brands).

Procedures

The questionnaire was constructed based on the literature review to assess the influence of gamification on consumer brand engagement. It was then created in Google Forms to create a link. The link was sent to 24 gamers who have video game habits. After the pre-test, an analysis was carried out, and some errors were corrected, and some questions were to make them more comprehensible to the participants. The questionnaire was then shared on social networks via the link generated in the Google Forms tool. The sharing was accompanied by a short text asking individuals to participate voluntarily, as well as the study's main objectives, guaranteeing the anonymity and confidentiality of the information provided. We conducted an online survey in social media recognized by Portuguese gamers, leaders of gaming companies, and the presential method to random gamers. The questionnaire was active from August 4 to October 6, 2023.

After this date, the data obtained from Google Forms was transferred to Microsoft Excel and then analyzed using IBM SPSS Statistics 29 software in the first part to analyze the individuals' characterization. In the second phase, even with the utilization of validated scales, it is often necessary to make slight adjustments to the instrument, mainly through item selection, considering the unique characteristics of each population. The refinement of scales took place during the confirmatory factor analysis (CFA) phase of the SEM procedure. Finally, the structural equation modeling (SEM) technique was used

to achieve the proposed objectives with a covariance-based SEM approach (CB-SEM). The R software version 4.1.1, and particularly the lavaan package version 0.6-14, were used to perform this analysis.

Results

Sample characterization

According to Table 1, the sample comprises 485 Portuguese individuals, most of whom were men (58,4%, $n = 283$). The ages of the participants ranged from less than 20 to 49 years old. Concerning education, most individuals have higher education, where most of them have a graduation level (55,7%, $n = 270$). In terms of occupation, most of them are employees (42,3%, $n = 205$). In terms of the profile of Portuguese gamers, they mostly spend 5 or more hours per day playing (33,2%, $n = 161$) and are acquainted with Gamify applications (66,2%, $n = 321$), which leads to a desire to see more in the future (91,3%, $n = 443$).

Table 1. Demographic information of respondents

		<i>n</i>	%
Gender	Feminine	202	41,6
	Masculine	283	58,4
Age	Less than 20	104	21,4

	20-29 years	197	40,6
	30-39 years	173	35,7
	40-49 years	11	2,3
Literary abilities	High School	122	25,2
	Degree	270	55,7
	Master's Degree	62	12,8
	Doctorate	3	0,6
	Postgraduate	28	5,8
Occupation	Unemployed	3	0,6
	Employed	205	42,3
	Entrepreneur	1	0,2
	Student	195	40,4
	Student worker	79	16,3
	Disability	1	0,2
Hours spent playing (p/day)	Less than 1	68	14,0
	1 to 2	108	22,3
	3 to 4	148	30,5
	5 or more	161	33,2
Knowledge of gamification apps	Yes	321	66,2
	No	164	33,8
Want to see gamification apps in the future	Yes	443	91,3

No	8,7	42
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Assessing measurement model validity

The CFA was carried out using the CB-SEM to assess the appropriate dimensionality, reliability, and validity. The final CB-SEM measurement model consisted of 4 items for the Immersion variable, 8 items for Achievement, 4 for Social Connection, 3 for Absorption, 6 for Affection, 4 for Identification, and 6 for the Social Connection variable. The following robust fit indices were calculated for the measurement model: root mean square error of approximation (RMSEA) = 0.069 (≤ 0.08), Tucker-Lewis's index (TLI) = 0.821, and comparative fit index (CFI) = 0.837. These indices meet the recommended guidelines, so model fit is considered acceptable (Hair et al.; Gana and Broc).

The evaluation of the constructs involves determining the indicators' reliability, internal consistency reliability, convergent validity, and discriminant validity (Cheung et al.). The main results are shown in Tabela 2.

According to Hair et al., the loading factor with a value above 0.5 is valid, and that same item should be kept. Based on this idea, 11 items with loading values below 0.5 were removed (IMi3, IMf3, ACi2, ACi6, ACi7, ACf2, ACf6, ACf7, SIi3, SIi3, and SC7), while the remaining items were above 0.5. The values obtained indicate that the scales used in this study have high construct validity.

Table 2. Reliability and convergent validity measures

Construct	Measurement item	Factor Loading	Construct reliability	Cronbach's alpha	Average variance extracted (AVE)
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IM	IMi1	0.785	0.868	0.864	0.627
	IMi2	0.714			
	IMi3	-			
	IMf1	0.866			
	IMf2	0.762			
	IMf3	-			
	ACi1	0.695			
AC	ACi2	-	0.897	0.895	0.527
	ACi3	0.675			
	ACi4	0.744			
	ACi5	0.742			
	ACi6	-			
	ACi7	-			
	ACf1	0.747			
	ACf2	-			
	ACf3	0.667			
	ACf4	0.742			
	ACf5	0.766			
	ACf6	-			
	ACf7	-			
	SIi1	0.800			
SI	SIi2	0.694	0.836	0.839	0.562
	SIi3	-			
	SIf1	0.814			
	SIf2	0.686			
	SIf3	-			

AB	AB1	0.871	0.894	0.893	0.737
	AB2	0.865			
	AB3	0.840			
AF	AF1	0.724	0.871	0.868	0.532
	AF2	0.713			
	AF3	0.832			
	AF4	0.804			
	AF5	0.685			
	AF6	0.628			
IDF	IDF1	0.657	0.873	0.873	0.636
	IDF2	0.728			
	IDF3	0.879			
	IDF4	0.910			
SC	SC1	0.615	0.871	0.867	0.533
	SC2	0.779			
	SC3	0.750			
	SC4	0.745			
	SC5	0.749			
	SC6	0.710			
	SC7	-			

This study calculated factor loadings, composite reliability, and average variance extracted (AVE) to evaluate convergent validity. The results of these indicators are shown in Table 2. The factor loadings for each item range from 0.615 (SC1) to 0.910 (IDF4). The construct reliability values range from 0.836 (SI) to 0.897 (AC). The reported value of the AVE measure for the seven variables is more significant than 0.5. Cronbach's alpha

coefficient and construct reliability were used to check the reliability of the measurement model. From the information in Table 8, the construct reliability measures exceed the 0.6 level, and all the Cronbach's alpha values are above the recommended value of 0.7, suggesting a high reliability of the scales (Hair et al.).

Discriminant validity is the extent to which the indicators of a construct represent a single construct that is genuinely distinct from others in the model. According to Hair et al., the rigorous test for calculating discriminant validity is to compare the AVE values in any of the constructs with the square of the correlation estimate between those two constructs.

In Table 3, the diagonal values in italics represent the square root of the AVE for each construct, while the remaining values refer to the correlation between the respective constructs. Discriminant validity can be achieved when the values on the diagonal are higher than those in the row and column. As shown in Table 3, the square root of the AVE is greater than the correlation between the constructs. Therefore, discriminant validity is reached.

Table 3. Measurement results of discriminant validity

Construct	IM	AC	SI	AB	AF	IDF	SC
IM	<i>0.791</i>						
AC	0.725	<i>0.726</i>					
SI	0.396	0.566	<i>0.749</i>				
AB	0.545	0.467	0.373	<i>0.855</i>			
AF	0.545	0.501	0.415	0.688	<i>0.729</i>		
IDF	0.305	0.346	0.267	0.350	0.421	<i>0.798</i>	
SC	0.504	0.523	0.313	0.535	0.606	0.638	<i>0.730</i>

Note: The diagonal entries in italics represent the square root of the Average Variance Extracted (AVE) for the construct. The other entries denote the correlations between the corresponding constructs.

Hypothesis analysis

Table 4 shows the estimated coefficients of the structural model between the latent variables and the corresponding analysis of the research hypotheses defined in this study. The path analysis of the model is displayed in Figure 2. As shown in Table 4, H1b, H2, H2a, H3b, and H3c are not supported at a significance level since the corresponding p-values are higher or equal to 0.1. This result shows that the data does not have enough evidence to reject that Immersion (IM) and Social Interaction (SI) have no impact on Identification (IDF) since the corresponding p-values are higher than 0.1; that Achievement (AC) has no impact on Absorption (AB) and Affection (AF) since the corresponding p-values are higher than 0.1; and, finally, that Social Interaction (SI) has no impact on Social Connection (SC) since the corresponding p-values are higher than 0.1. All hypotheses are supported at 0.05, except H2b, which is only supported at 0.1.

In Table 4, it is also possible to conclude that, in explaining intention, the most substantial effect is obtained by IM (coefficient = 0.406; t-value = 4.158), followed again by IM (coefficient = 0.253; t-value = 3.680), AC (coefficient = 0.207; t-value = 2.816) and, lastly, by SI (coefficient = 0.162; t-value = 2.992). Hypotheses H1c, H2b, and H3 are validated at a significance level of 0.05, again with a positive coefficient, thus revealing a positive effect of IM on SC, AC on IDF, and SI on AB. To explain the influence, the data suggests that Achievement is highly significant (coefficient = 0.208; t-value = 1.868), followed by SI (coefficient = 0.195; t-value = 2.443) and IM (coefficient = 0.155; t-value = 2.747).

Table 4. Action path coefficients and corresponding hypothesis analysis

Hypothesis	Relationship	Coefficient	Standard error	t-value	p-value	Supported
H1	IM -> AB	0.406	0.098	4.158	0.000**	Yes
H1a	IM -> AF	0.253	0.069	3.680	0.000**	Yes
H1b	IM -> IDF	0.101	0.095	1.063	0.288	No
H1c	IM -> SC	0.155	0.056	2.747	0.006**	Yes
H2	AC -> AB	0.020	0.111	0.179	0.858	No
H2a	AC -> AF	0.055	0.071	0.775	0.438	No
H2b	AC -> IDF	0.208	0.111	1.868	0.062*	Yes
H2c	AC -> SC	0.207	0.073	2.816	0.005**	Yes
H3	SI -> AB	0.195	0.080	2.443	0.015**	Yes
H3a	SI -> AF	0.162	0.054	2.992	0.003**	Yes
H3b	SI -> IDF	0.124	0.076	1.643	0.100	No
H3c	SI -> SC	0.026	0.050	0.528	0.597	No

Note: * significance was obtained at the 0.10 level; ** significance was obtained at the 0.05 level.



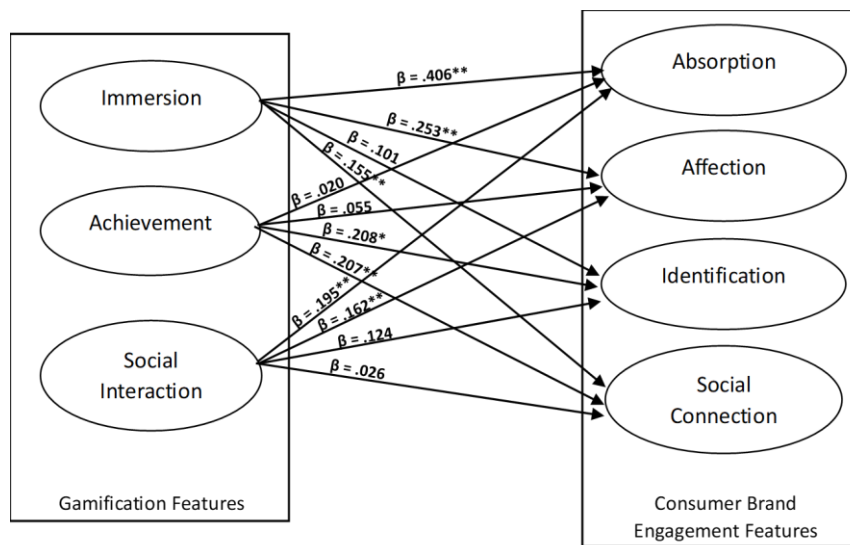


Figure 2. Estimated structural model

Note: * significance was obtained at the 0.10 level; ** significance was obtained at the 0.05 level.

Discussion

According to our empirical data, Gamification dimensions positively impact Consumer Brand Engagement (CBE). Specifically, Immersion-related Gamification features show impacts with Absorption, Affection, and Social Connection—indicating absorption, affection, and social connection with the brand (H1, H1a, H1c accepted), which does not corroborate what was said by Xi and Hamari. Regarding Achievement-related Gamification features, connections were established with Identification and Social Connection, denoting identification and social connections with the brand (H2b and H2c accepted), which is in line with what was said by Xi and Hamari and Yee, Ducheneaut and Nelson. Additionally, Social Interaction in Gamification correlates with Absorption and Affection with the brand (H3 and H3a accepted), which does not corroborate what was said by Xi and Hamari and Gatautis et al.. Surprisingly, immersion-related features are only positively related to absorption, affection, and social connections with the brand,

not identification with it (H1b rejected), which is in line with what Gatautis et al. (2016) said. Examining the achievement-related Gamification features, there are no connections between absorption and affection with the brand (H2 and H2a rejected), which does not corroborate what Gatautis et al. (2016) said. Furthermore, social interaction in Gamification did not show connections with identification and social connections with the brand, which does not corroborate what was said by Gatautis et al.. Overall, the results suggest that Gamification significantly influences consumer engagement with brands, although consumer interaction with Gamification features does not entirely explain brand engagement (Gatautis et al., 2016; Sangroya et al., 2021).

Not all Gamification elements affect consumer engagement with brands equally. In other words, immersion-related features, like avatars/virtual identity/profile and personalization characteristics, serve a more social and affective role with the brand than with its identification. This is because they allow displaying player information to others, facilitating information exchange about the brand rather than identifying with it. This idea aligns with observations by Xi and Hamari (2020) in their Gamification study. However, it is also plausible that greater involvement with immersion features may lead consumers to have a greater inclination for social exploration of brands, making them more aware of them (Xi & Hamari, 2020). Subsequently, achievement-related Gamification features, such as leaderboards, points, medals, and ranking levels, serve a more identifying and social function with the brand than absorption and affection. One possible explanation is that in recent years, some fundamental Gamification elements, like leaderboards, have lost interest among players, focusing more on competition (Zichermann & Linder, 2013) and identification with game elements (Werbach & Hunter, 2020) rather than affinity to them, in a multifaceted experience of brand knowledge with a social experience resulting

from social prestige (Xi & Hamari, 2020). Finally, the social interaction elements of Gamification, such as competition and team, have a stronger association with absorption and affection with brands than identification and social connection. This is because, as in video games, there is an increased demand for competitive and team-related elements, fostering unconscious affection and absorption of brands more than conscious identification with them. In other words, interacting with different social features can provide a sense of affection for the brand, cultivate attachment to them, and have gaming experiences like those presented in MMORPGs (Xi & Hamari, 2019).

Concerning Consumer Brand Engagement (CBE), it can be stated that it is necessary to create emotional relationships between the brand and its consumers to incorporate retained learnings, brand recognition development, and a positive feeling of accomplishment when perceiving the involved quality. This is supported by the study of Ndhlovu & Maree (2022), forming the basis for this study's scale. This idea can be verified through the positive influence of Gamification on CBE, enabling consumers to be absorbed (AB; H1, H3) by the immersive activities of the brand (IM; H1a, H1c), in the involvement of achievement (AC; H2b, H2c), and value co-creation in social interactions (SI; H3, H3a) (Banytė et al., 2021; Claudia et al., 2023).

Conclusion

This study's primary objective was to investigate Gamification's impact on consumer brand engagement (CBE), focusing on the perspective of Portuguese gamers, which was achieved. The literature review encompassed relevant issues, including analyzing models and theories commonly embedded in related studies. Key themes centered on gamification and consumer brand engagement, aligning with the initially defined research

objective. These themes were explored to construct a logical sequence, transitioning from examining gamification strategies rooted in the knowledge and market of video games to exploring brand-related concepts facilitating engagement with contemporary strategies. Additionally, the review addressed the video game industry's growth in the national market. This condensed exploration emphasizes essential points without unnecessary detail, aligning to provide a concise conclusion. Moreover, these insights from the literature review lay the groundwork for the subsequent empirical investigation, aiming to validate and extend the findings derived from existing literature.

The emergence of Gamification beyond gaming environments was driven by the enjoyment, engagement, and immersion in video games. This transition was accelerated by the widespread adoption of mobile devices, technological advancements, and intensified interactions between companies/brands and consumers.

Moving on to the results of this empirical study, it was concluded that, within the context of Portuguese gamers, Gamification dimensions, particularly immersion, positively affect the construction of CBE. In other words, immersion impacts the components of absorption, affection, and social connection; Gamification achievement affects only identification and social connection, and social interaction affects only absorption and affection in this process.

The study's results indicate that all the variables studied are determinants of CBE, influencing perceptions of the brand, and it should be noted that some items are more valuable than others, affecting different dimensions of this involvement. These results corroborate studies by Xi and Hamari and Ndhlovu and Maree. However, contrary to the results obtained by the former, Gamification immersion affects other dimensions of brand engagement, except for identification. Additionally, the same study states that

achievement and social interaction affect all dimensions of consumer engagement with brands. This study did not confirm this with a more detailed focus on CBE, identifying that both only impact two opposing dimensions. This nuanced examination, with a specific focus on CBE, underscores the unique contribution of our study. For managers, our research provides actionable insights into optimizing Gamification strategies for enhancing consumer-brand interactions. Managers can implement targeted marketing campaigns and tailored experiences that resonate with their target audience by understanding how immersion, achievement, and social interaction influence brand engagement. This enables them to foster stronger brand loyalty, increase customer satisfaction, and drive revenue growth. Furthermore, our study empowers organizations to adapt to evolving consumer preferences and market dynamics. Organizations can refine their marketing approaches and allocate resources more effectively by identifying the dimensions of brand engagement impacted by Gamification strategies. This enables them to stay ahead of the competition, capitalize on emerging trends, and maintain a competitive edge. In other words, it allows marketing managers with practical strategies to enhance consumer-brand interactions through Gamification while also enabling organizations to optimize their marketing efforts and achieve sustainable growth in today's dynamic business environment.

In summary, the Gamification strategy should consider the context, objective, and target audience to be integrated into constructing consumer engagement with brands for effective implementation and positive outcomes.



Implications

The present study holds significant implications for both academia and professionals. By surpassing specific limitations or gaps in the literature, it contributes to the existing body of knowledge. Compared with previous studies such as Xi and Hamari (2020), the research findings highlight the need for tailored approaches in Gamification strategies. Specifically, this study emphasizes the importance of contextual factors, objectives, and target audiences when implementing gamification to construct consumer engagement with brands.

Moreover, this study addresses the identified research gap of limited investigations into the effects of Gamification on brand engagement, as noted by Xi and Hamari (2020). It introduces newer scales, applies them in diverse contexts, utilizes structural equation modeling, and focuses on the Portuguese market from the perspective of active gamers—adding a unique dimension to the existing literature.

Understanding the nuanced impact of different Gamification dimensions on consumer engagement provides valuable insights for professionals. Tailoring Gamification strategies based on the identified preferences and expectations of the target audience, particularly gamers, is crucial for successful brand engagement. The findings underscore the importance of a strategic and context-specific approach to Gamification implementation to maximize its effectiveness in fostering positive consumer-brand relationships.

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