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The influence of online game aesthetics on players' loyalty

The aesthetics of online games play a crucial role in shaping how players perceive, experience, and engage with digital entertainment. However, the specific impact of games on preferences for various forms of digital entertainment remains unclear. Our study aims to fill that gap by examining how online game aesthetics influence patterns of digital entertainment consumption. Using a quantitative explanatory approach, we collected data via a questionnaire completed by players of online games in Brazil. Analysis via partial least squares modeling revealed that game aesthetics directly impact variables such as positive image and satisfaction, as well as indirectly influence avatar identification and players' loyalty.

Keywords: *online gaming, aesthetics, digital entertainment consumption, Brazil*

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1. Introduction

Despite the gaming industry's extraordinary growth in the past two decades, shifting market dynamics, rising development costs, and evolving player expectations continue to present new challenges. Although emerging technology such as cloud gaming, augmented reality, and virtual reality offer future potential, the immediate success of games can be expected to increasingly depend on innovative monetization strategies and deeper audience engagement (Paizanis et al. 2024). In that context, though much of the research on player engagement has focused on problematic use (Bányai et al. 2018), in our study we examined the positive drivers of loyalty, including game aesthetics.

A crucial element in sustaining the interest of players of online games—hereafter, "players"—lies in the immersive power of game design. In particular, the visual and auditory design of online games—in a word, their aesthetics—not only shapes gameplay but also influences how players perceive and emotionally engage with the experience (Souza 2016). Furthermore, research on gamification has shown that although visual elements enhance performance, auditory and audiovisual components primarily influence immersion and flow, and players generally prefer a combination of both for a more engaging experience (Schubhan 2024). From captivating visuals to immersive soundtracks and memorable character designs, each aesthetic component fosters a profound sense of immersion and emotional connection to the virtual world. Taken together, those game aesthetics play a pivotal role in shaping how players interact with and consume digital entertainment.

Given technological advancements, online games have become more and more visually sophisticated and now offer richly detailed, immersive environments. According to Menezes (2018), aesthetics constitute a significant factor in patterns of consumption. As a result, visual quality has become crucial in players' decisions regarding where to invest their time and resources, which, in turn, has increasingly impacted the industry in immediate ways.

As the growing demand for visually impressive games drives innovations in graphics technology and establishes higher aesthetic standards, both the digital entertainment ecosystem and players' consumption behaviors have transformed (Menezes 2018). Investigating how those distinctive aesthetics influence players' preferences across various entertainment formats presents a promising area of research that can offer valuable insights for game developers, marketers, and scholars.

Along those lines, in our study we sought to answer a critical question: How does the aesthetics of online games influence consumption patterns when it comes to digital entertainment?

2. Patterns of digital entertainment consumption and the cultural dimension of aesthetics

Patterns of digital consumption have evolved considerably in recent decades due to a host of factors. Among them, the rise of mobile devices has generated distinct

consumption preferences across generational lines. For instance, whereas baby boomers (i.e., born from 1946 to 1964) primarily consume media via television, millennials (i.e., born from 1981 to 1996) and members of Generation Z (i.e., born 1997 to 2012) show a strong preference for media consumption using mobile devices (Ali 2021).

The segmentation of consumers by generation provides a useful framework for analyzing shifts in patterns of cultural consumption, with digital consumption constituting a major aspect of cultural engagement today. According to Canclini's (1993) approach, the adoption and use of cultural products are deeply embedded in cultural processes. That perspective frames cultural consumption not merely as an individual choice but as an activity with broader sociocultural significance. Beyond that, Canclini's view suggests that cultural consumption is imbued with symbolic meaning.

Canclini's (2005) development of the discussion on the relationship between cultural consumption and cultural processes encourages the exploration of how changes in the appropriation of cultural products interact with exercises of citizenship. In that vein, in our study we drew on Canclini's insights to conceptualize games as a form of cultural consumption and to investigate the cultural processes and forms of sociability within which gaming is situated.

In parallel, research by Rodrigues, Lopes, and Mustaro (2007), among other scholars, has examined how gaming communities form and the cultural implications of that process. The diverse cultural nuances in the experiences of those virtual communities underscore the need to move beyond generational categories, from baby boomers onward, to develop methodologies that more accurately capture specific dynamics within the gaming world. Thus, along those lines, in our study we focused on how aesthetics, as a cultural dimension, shapes patterns of consumption in the gaming industry. In what follows, we present the conceptual model that guided our research.

3. Conceptual model

As digital gaming has become an integral part of many individuals' daily lives, interest in understanding the behaviors associated with its use has grown. To examine those interactions in greater depth, in this article we propose a research model, shown in Figure 1. The hypotheses presented seek to not only analyze behavioral patterns but also enhance understandings of users' motivations, impacts, and preferences. Altogether, the approach stands to facilitate a more comprehensive perspective on the growing cultural significance of digital games, foster reflection on their evolving role in society, and provide insights into potential future trends.

In our model, game aesthetics are conceptualized as a combination of various elements, including sound effects, storyline, graphics, animations, avatars, and environment design (Wu and Hsu 2018). *Avatar identification*, as defined by Teng (2017), refers to the extent to which players perceive their avatars as extensions of themselves. Thus, a positive avatar image is characterized by the degree to which

the avatar is regarded favorably—for example, as likeable, attractive, or visually appealing—especially by peers (Teng 2019). Meanwhile, satisfaction, as described by Yang, Wu, and Wang (2009), reflects the quality of a product or service in light of users' interactions and plays a crucial role in shaping consumer behavior and loyalty. In essence, satisfaction determines whether users will continue engaging with a particular product or service.

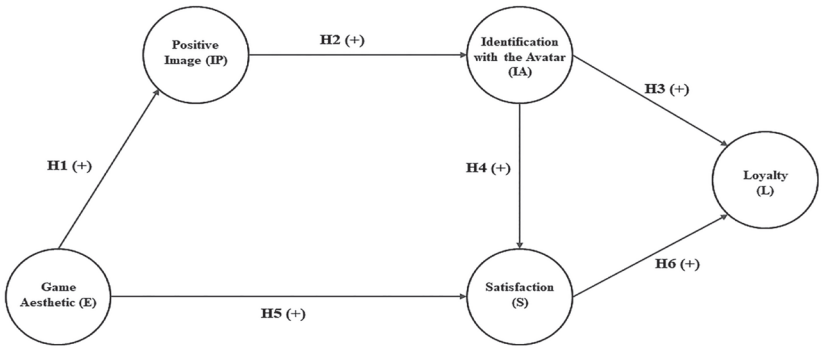

Figure 1. Conceptual model of the research

3.1. Formulation of hypotheses

Game aesthetics are fundamental in shaping the positive perception of avatars within games. According to Wu and Hsu (2018), elements such as visual design, customization options, and the avatar's overall appearance play significant roles in fostering players' identification with and emotional attachment to their virtual characters. High-quality aesthetics can enhance the appeal of an avatar by making it more captivating and engaging for players, which directly contributes to a more positive perception of the avatar within the world of the game (Teng 2019). Thus, game aesthetics not only influence the avatar's image but also enrich the overall experience for players and strengthen their connection to the virtual world created. We therefore hypothesized the following:

H1: Game aesthetics are positively associated with a favorable image of an avatar.

Steele (1999) has argued that, along with a desire to perceive themselves as unique individuals, people also strive to be viewed positively by others, which leads them to identify with objects that reflect a favorable image. That principle is particularly

relevant in online gaming, in which players often seek avatars that they perceive as being well-regarded by others, given that those avatars serve as their representation within the virtual environment (Behrend et al. 2012). Players' positive evaluations of their avatars thus depend on the extent to which those avatars can be seen as favorable reflections of themselves.

Consequently, the drive to uphold a positive self-image shapes players' choices of avatars in online games. By selecting an avatar with a favorable image, the player establishes a strong connection between the avatar's representation and their own self-identification, which, in turn, reinforces their own positive self-image. Thus, we also proposed:

H2: A favorable avatar image is positively associated with avatar identification.

Identification with an avatar can be significantly influenced by the avatar's image, which determines whether the experience is positive and engaging. By enhancing immersion and fostering a sense of belonging in virtual worlds, avatars serve as tools for expressing identity. In online games, players may control their avatars from either a first-person perspective (i.e., seeing through the avatar's eyes) or a third-person perspective (i.e., observing the avatar externally). By offering predefined avatars and/or allowing customization, games enable players to craft avatars that reflect their personal traits and/or aspirational ideals. Such possibilities align with theories of digital identity, which hold that online environments enable the creation of new, aspirational selves (Zoltán 2020). When players can customize their avatars in those ways, they tend to develop a stronger attachment both to their avatars and to the game overall.

Research has indicated that players often experience strong identification and emotional attachment through various aspects of their avatars, which makes avatar identification a powerful psychological component in gaming. That connection, in extending to the players' self-conception and personal narrative, becomes a central factor in enjoyment (Wolfendale 2007; Mancini and Sibilla 2017; Liew et al. 2018; Stavropoulos et al. 2020). Therefore, *avatar identification*, as defined by Van Looy, Courtois, and De Vocht (2010, 206), is the "temporary alteration in the player's self-perception induced by mental association with their character in the game," wherein the avatar functions as an extension of the player's identity.

Unlike traditional media such as television and film, games require active engagement, for players inhabit the fictional world directly and assume an active role within its narrative. According to Van Looy, Courtois, and De Vocht (2010), that dynamic causes players to refer to their avatars as "I" and the game world as "here." Such an immersive connection intensifies personal investment in the game, which can lead to greater overall satisfaction with it.

Trepte and Reinecke (2010) have also suggested that avatar identification enhances social interactions within online gaming communities, thereby resulting in increased player gratification. When players identify strongly with their avatars, they are more likely to participate in collaborative and competitive activities, which strengthens their social ties with other players and fosters an environment of support and recognition among peers. That sense of connection and community is

crucial in enhancing enjoyment in gaming, and the stronger a player's identification with their avatar, the deeper their immersion in the game, which results in greater motivation, a greater intention to play again, and stronger loyalty.

Considering all the above, we additionally hypothesized that:

H3: Avatar identification is positively associated with players' loyalty.
H4: Avatar identification is positively associated with players' satisfaction.
H6: Players' satisfaction is positively associated with players' loyalty.

Because game aesthetics can also significantly influence a game's profitability and the level of player immersion, they are essential to the gaming experience. Wu and Hsu (2018) have described game aesthetics as encompassing a range of elements, including sound effects, narrative, graphics, animations, avatars, and scenography. Crouch et al. (2004) have further argued that a game's aesthetic appeal can shape gameplay by evoking specific associations, perceptions, and emotions, which consequently affect how players connect with and engage in the game. In essence, the manner in which those aesthetic elements are presented can either amplify or diminish players' emotional responses, thereby shaping their desire to continue playing and directly influencing their satisfaction with the game.

Because well-designed aesthetics are likely to evoke positive emotions and enhance player satisfaction, we proposed the following final hypothesis as well:

H5: Game aesthetics are positively associated with players' satisfaction.

4. Methods

Our study was quantitative and explanatory because we formulated hypotheses and sought to identify the factors that contribute to or determine the subject of investigation (Gerhardt and Silveira 2009). In particular, we aimed to examine whether the aesthetics of digital games impact players' loyalty.

The research was conducted in Brazil, which ranks as the tenth-largest gaming market worldwide, with more than 100 million players who collectively spent $2.7 billion on gaming in 2022, thereby representing approximately 3% of the global player base (Newzoo 2024). Newzoo (2024) has also highlighted that Brazil leads the Latin American gaming market and is the second-largest market in the Global South, second only to China. Given Brazil's current trends in gaming consumption, the country has the potential to rise to sixth place globally in digital game consumption and, in doing so, surpass the United Kingdom.

We employed an online questionnaire hosted on Google Forms as our primary data collection tool. The questionnaire included 22 questions focused on the variables outlined in our hypotheses and generated data from October 2023 to March 2024.

To construct our research model, we integrated insights from Sanchez-Franco and Rondan-Cataluña (2010), Teng (2019), and Wu and Hsu (2018). The measurement scale was translated from English to Portuguese to ensure clarity for respondents. All items were assessed on a 5-point Likert scale, with 1 representing strongly

disagree and 5 representing strongly agree. Although originally developed in English, the questionnaire was translated into Portuguese by native Brazilian Portuguese speakers in order to enhance comprehension. Table 1 displays the variables along with their corresponding indicators.

Source	Variable	Indicator
Teng (2019)	Positive image	**IP1:** My avatar has a positive image. **IP2:** Overall, to me, my avatar has a positive image. **IP3:** My decision to use my avatar was good. **IP4:** My avatar is useful when I am playing the game. **IP5:** My experience using my avatar is positive. **IP6:** My avatar is very valuable in the game.
	Identification with the avatar	**IA1:** I have strong feelings of ownership toward my avatar. **IA2:** I feel like my avatar is an extension of myself. **IA3:** My avatar gives me a form of self-expression. **IA4:** My avatar is extremely important to me.
	Loyalty	**L1:** The online game is my top choice when I consider playing games online. **L2:** I will recommend the online game to others who want to play an online game.
Wu and Hsu (2018)	Game aesthetics	**E1:** I feel that the sound effects of the online game are good. **E2:** I feel that the graphics of the online game are good. **E3:** I feel that the narrative of the online game is good. **E4:** I feel that the animation of the online game is good. **E5:** I feel that the avatar design of the online game is good. **E6:** I feel that the scenography of the online game is good.
Sanchez-Franco and Rondan-Cataluña (2010)	Satisfaction	**S1:** I think that I made the right decision by playing the digital game. **S2:** The experience that I have had with the online game has been satisfactory. **S3**: Overall, I am satisfied with how efficiently the online game has been functioning. **S4:** Overall, I am satisfied with the service that I have received from the online game.

Table 1. Variables and indicators of the proposed model (Sanchez-Franco and Rondan-Cataluña 2010; Teng 2019; Wu and Hsu 2018)

Data analysis was conducted through structural equation modeling using partial least squares, as suggested by Ramírez, Mariano, and Salazar (2014), with SmartPLS 4 software (Ringle, Silva and Bido 2015). The analytical approach allowed testing relationships between variables in the proposed model, assessing the adequacy of parameters based on the literature, and determining the percentage of variance that the model explains in relation to our study's focus.

To determine the minimum sample size required for research using partial least squares, we utilized G*Power 3.1 (Faul et al. 2009). That process generally involves identifying the latent variable with the highest number of connections or predictors. In our study, we focused on two variables: satisfaction (S) and loyalty (L), each with two connections.

Two parameters also needed to be considered: test power and effect size. Following the recommendations of Hair et al. (2021), the desired power level was set at 0.80 and the effect size at 0.15. The results from the software, as illustrated in Figure 2, indicated that the minimum sample size required for the study was 68.

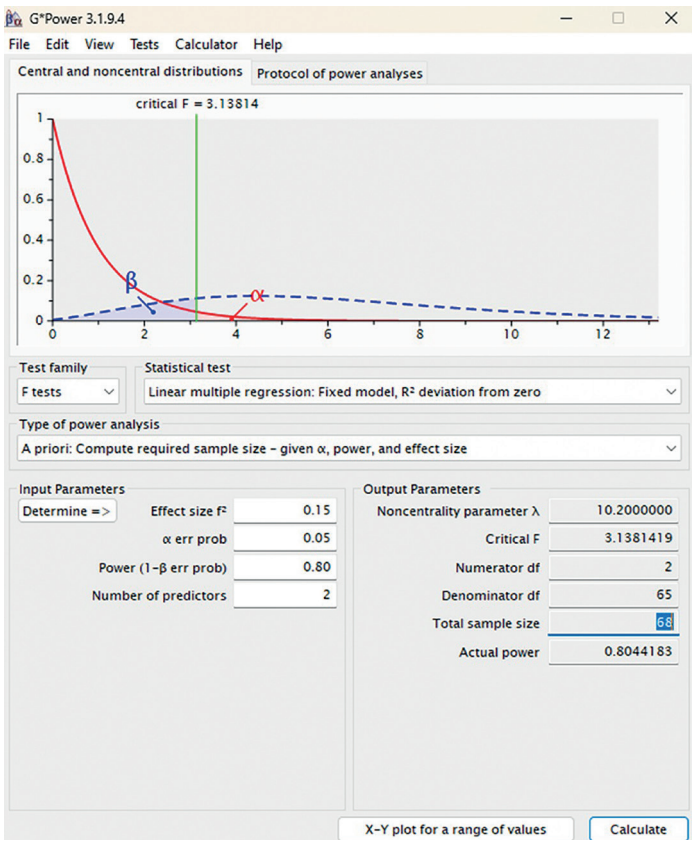

Figure 2. Results using G*Power 3.1

5. Results

A total of 164 valid responses were obtained (Table 2), with 100 respondents identifying as cisgender women (61%) and 53 as cisgender men (32.2%). Most respondents were 20–24 years old (37.2%) or 25–29 years old (34.8%). Players reported using various devices to play games: 79.3% on a computer, 54.3% on a smartphone, and 42.7% on a console. When asked about their average weekly gaming time, 22.6% reported playing between 3 and 6 hours, 20.7% between 6 and 10 hours, and 17.1% between 12 and 20 hours. Notably, ones who reported playing for more than 20 hours per week were typically professionals in the digital gaming industry, whereas ones who reported playing less than 3 hours per week were more casual gamers.

	Category	***n***	**%**
Gender	Cisgender woman	100	61
	Cisgender man	53	32.3
	Transgender woman	2	1.2
	Transgender man	2	1.2
	Nonbinary	4	2.4
	I prefer not to identify myself	3	1.8
Age in years	18–19	9	5.5
	20–24	61	37.2
	25–29	57	34.8
	30–34	23	14
	35–40	10	6.1
	>40	4	2.4
Devices	Smartphone	89	54.3
	Console	70	42.7
	Computer	130	79.3
	Notebook	50	30.5
	Tablet	6	3.7
	Portable console	12	7.3
	Smart TV	4	2.4
	Virtual reality device	5	03
	Other	3	1.8

Hours played per week	<1	7	4.3
	1–3	20	12.2
	3–6	37	22.6
	6–10	34	20.7
	10–12	12	7.3
	12–20	28	17.1
	20–40	16	9.8
	>40	10	6.1

Table 2. Descriptive results

For model fit assessment, the standardized root mean square residual was 0.083, which indicates a good fit according to Hair et al. (2021). Reliability analysis revealed that the composite reliability values for the latent variables ranged from 0.802 to 0.921, thereby reflecting the satisfactory reliability of the constructs. Moreover, all heterotrait–monotrait ratios were less than 1.0, which confirmed discriminant validity. Thus, the reliability and validity of the constructs in the model were considered to be adequate.

Next, the Pearson determination coefficient (R^2) was evaluated to measure the proportion of variance in the endogenous variables explained by the structural model (Ramírez, Mariano and Salazar 2014). According to Ramírez, Mariano, and Salazar, R^2 values are deemed acceptable if they exceed 0.1. The analysis yielded R^2 values of 0.12 for the positive image, 0.57 for avatar identification, 0.21 for satisfaction, and 0.53 for loyalty. Those values indicate that the structural model explained 53.9% of the variance in players' loyalty to the digital game, as depicted in Figure 3.

Beta coefficients (β), illustrated in Figure 3, represent the strength of the relationships between variables. The significance of the predictor variables was assessed based on whether β values were either greater than or equal to 0.2 or less than or equal to −0.2. Bootstrapping with a 95% confidence interval was performed to ensure the stability of the estimates (Ramírez et al. 2014). Significance was determined using *t* values, with values greater than or equal to 1.96 considered to be significant and *p* values less than or equal to 0.05 indicating statistical significance (Hair et al. 2021).

The results, presented in Table 3 and Figure 3, supported all the proposed hypotheses.

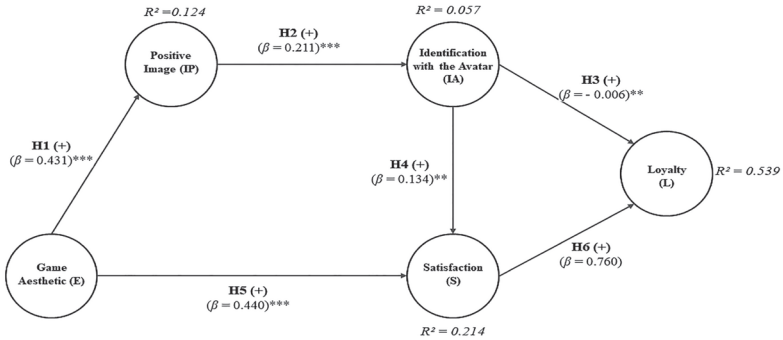

Figure 3. Results of the conceptual model of the research from SmartPLS 4

Hypothesis	Path coefficient	Confidence interval		*t*	Supported?
		2.5%	97.5%		
E -> IP	0.353	0.226	0.510	4.899***	Yes
E -> S	0.380	0.218	0.550	4.463***	Yes
IP -> IA	0.239	0.117	0.385	3.435***	Yes
IA -> S	0.192	0.052	0.336	2.583**	Yes
IA -> L	0.154	0.058	0.250	3.089**	Yes
S -> L	0.676	0.580	0.765	14.055***	Yes

Note. $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

Table 3. Results from SmartPLS 4

In particular, game aesthetics were positively related to the positive image of the avatar, which supported H1 with a path coefficient of 0.353 (2.5% CI: 0.226, 97.5% CI: 0.510, *t*: 4.899***). The positive image of the avatar was also positively related to avatar identification, which validated H2 with a path coefficient of 0.239 (2.5% CI: 0.117, 97.5% CI: 0.385, *t*: 3.435***). Avatar identification was positively associated with both players' loyalty and player satisfaction, which supported H3 with a path coefficient of 0.154 (2.5% CI: 0.058, 97.5% CI: 0.250, *t*: 3.089**) and supported H4 with a path coefficient of 0.192 (2.5% CI: 0.052, 97.5% CI: 0.336, *t*: 2.583**), respectively. Player satisfaction had a strong positive relationship with loyalty, which supported H6 with a path coefficient of 0.676 (2.5% CI: 0.580, 97.5% CI: 0.765, *t*: 14.055***).

Last, game aesthetics positively influenced players' satisfaction, which supported H5 with a path coefficient of 0.380 (2.5% CI: 0.218, 97.5% CI: 0.550, *t*: 4.463***). Those findings underscore the significance of game aesthetics and user satisfaction as pivotal factors in enhancing the positive image of the avatar, avatar identification, and ultimately, players' loyalty.

6. Discussion

In all, our investigative model can elucidate how the aesthetics of online games influence patterns of consumption in digital entertainment among players in Brazil. First, loyalty to digital games is primarily driven by satisfaction and avatar identification, in that order of importance. Satisfaction emerged as the most critical factor in explaining loyalty, for greater enjoyment from playing a specific game directly correlated with increased loyalty to it, a finding supported by Teng et al. (2022).

Second, the various components of aesthetics—sound, graphics, narratives, animations, scenography, and avatar design—were found to play significant roles in shaping attitudes and behaviors toward digital game consumption. In general, players are increasingly inclined to seek games with higher aesthetic quality (Wu and Hsu 2018). Consequently, a game that boasts superior aesthetic standards enhances the visual appeal of the avatar, which, in turn, strengthens its attractiveness, connection, and engagement, thereby leading to a more positive perception (H1).

Moreover, it is crucial to highlight that consistency in the aesthetics of digital games, including the avatar, contributes to a more immersive, cohesive gaming experience. When the visual style of the avatar better aligns with the game's narrative, players tend to develop a more favorable impression of their presence within the world of the game, as noted by Alexiou and Schippers (2018).

Third, research by Steele (1999) and Behrend et al. (2012) has indicated that players develop a stronger sense of empathy and emotional attachment to their avatars when they have a more positive perception of them. In some instances, players may even project their emotions and personal experiences onto their avatars, particularly if others in the digital game environment also view those avatars favorably. That dynamic can enhance players' self-perception. As discussed earlier, there has been an increased emphasis on elevating the aesthetic standards of games, which has resulted in avatars that are more realistic and authentic and, in turn, facilitated the mentioned identification, a finding that supported H2.

When players have the opportunity to customize the aesthetics of their avatars, it also enables them to express their identities within the game. Such personalization fosters a deeper emotional connection to both the avatar and the game itself, which raises the likelihood that players will remain satisfied and loyal over time, as suggested by H3 and H4 (Alexiou and Schippers 2018). Thus, stronger identification with the game's avatar contributes to a more stable, more engaged player base, which prompts continued support for the game via in-game purchases as well as increased community participation and recommendations to others.

Last, we found that the aesthetics of digital games positively impact overall satisfaction with games, which consequently influences players' loyalty (i.e., H5 and H6). Because aesthetics often serve as players' first impression of games, visual appeal is critical. In short, an attractive aesthetic can enhance initial perceptions and increase the likelihood that players will continue to engage with the game (Crouch et al. 2004).

Altogether, well-crafted aesthetics can create a rich, immersive experience that elicits specific associations, perceptions, and emotions. The more immersive the experience, the greater the likelihood that players will continue their engagement with the game. In essence, aesthetics that are both effective and appealing can play a vital role in a digital game's longevity and success.

7. Final remarks

This article introduces the first model that illustrates how the aesthetics of digital games influence players' loyalty and satisfaction and thus emphasizes the critical role that aesthetics play in shaping consumers' interactions with digital entertainment. In particular, games that feature visually appealing aesthetics foster emotional connections that can lead to prolonged playtime and repeated engagement with the games. Such visual allure not only enhances the experience of users but also aids in establishing a distinct brand identity that helps the game to stand out in a crowded marketplace.

The academic implications of the phenomenon are substantial. Investigating how game aesthetics affect players' satisfaction and loyalty can illuminate the motivations driving consumer behavior on digital entertainment platforms. Moreover, those insights can guide best practices within the gaming industry by enabling developers and designers to craft experiences that not only attract new players but also keep existing ones engaged in the long term. Added to that, our analysis enriches the literature on digital consumption while offering practical insights for developing future products in the rapidly evolving gaming market.

Considering our findings, future research should explore aesthetic influences in other countries and examine the psychological and economic factors that underlie aesthetic choices when it comes to games. However, it is also important to acknowledge some limitations of our study, including the low number of women who responded and the underrepresentation of participants more than 40 years old.

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