Digital Creativity Drives Game Success and Premium Pricing Dynamics

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Abstract. General Background: The digital gaming industry represents a rapidly expanding sector within the global creative economy, where understanding drivers of market success remains critical. Specific Background: While prior studies have emphasized production, monetization, and innovation, the role of digital creativity in shaping game performance within platform-based ecosystems such as Steam remains underexplored. Knowledge Gap: Limited empirical research examines creativity using behavioral metrics derived from real market data and its relationship with pricing strategies and performance outcomes. Aims: This study investigates how digital creativity and pricing jointly relate to game success using a dataset of 9,455 Steam games. Results: The findings demonstrate that digital creativity, measured through the Digital Creativity Index (DCI), shows a strong positive association with player ratings and engagement, while pricing exhibits only a marginal effect; however, a positive interaction indicates that higher creativity aligns with greater willingness to pay for premium games, supported by clustering results identifying strategic archetypes including Creative Hits, Price-Oriented Performers, and Community Builders. Novelty: This study introduces a behavioral, data-driven measure of digital creativity and integrates innovation-based competitive advantage with signaling theory in a unified empirical framework. Implications: The results provide strategic insights for developers, publishers, and policymakers by highlighting creativity as a key driver of sustainable competitive advantage and value creation in digital game markets.

Keywords: Digital Creativity, Game Success, Pricing Strategy

1 Introduction

The digital game industry has as one of the fastest-growing creative sectors worldwide, blending elements of art, technology, and interactivity to create immersive digital experiences. Platforms such as Steam have revolutionized access for developers, lowering entry barriers and promoting a democratized ecosystem of innovation. As gaming increasingly transforms into a data-driven creative economy, understanding what drives success beyond technical or financial resources has become a central question in both strategic management and digital innovation research.

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Despite massive global expansion, empirical evidence exists of games failing to achieve commercial and social success, suggesting that creative potential does not automatically translate into market performance [4]. Numerous studies have attempted how game developers face a managerial dilemma between investing in creative innovation and pursuing aggressive pricing strategies to attract and retain players [1], [2]. This trade-off raises a fundamental question: does creative value, embodied through artistic and design innovation, outweigh economic accessibility in determining a game's success on digital marketplaces like Steam?

Digital creativity represented a combination of innovation, artistic flair, narrative uniqueness, and interactive design that collectively produce novel user experiences [3], [4], [5], [6]. Based on Innovation-Based Competitive Advantage Theory [7], [8], creative innovation served as a dynamic capability that enables organizations to maintain superior performance in hypercompetitive digital environments. In parallel, signaling theory posited that price functions as both an indicator of quality and a tool that influences user access [9], [10]. In the digital games market, these two theoretical approached intersect: creative differentiation enhances the perception of uniqueness, while pricing structures influence adoption and engagement dynamics.

Previous studies have shown that creative innovation in games fosters emotional intimacy and repeat engagement, which are crucial for player sustainability in platform-based ecosystems [11]. Furthermore, digital creativity acted as a form of value co-creation, where player experiences and social interactions contribute to broadening the perceived creativity of a game title [1], [12], [13], [14]. Thus, creativity in digital games was increasingly viewed as a form of strategic innovation capital that drives competitiveness from both artistic and economic perspectives.

Pricing in digital markets simultaneously functions as a revenue-generating strategy and a signal of quality and accessibility [15], [16], [17]. Rao et al. highlighted that price conveys information about a product's value proposition, influencing consumer expectations and trust [16]. However, in the games market, accessibility played a crucial role: low prices could stimulate mass adoption and network effects, while high prices could limit diffusion but reinforce perceptions of exclusivity [18].

However, while several studies have used game techniques, innovation, engines, monetization, and genre to identify game success [19], [20], we found that limited studies have investigated the dimensions of creativity. Understanding how creativity based on player behavior, derived from actual market data, impacts tangible performance indicators such as ratings, engagement, and player retention, remains limited.

The purpose of this study is to examine the relative strengths of creative innovation and pricing strategies in driving performance. Specifically, it asks two questions: (1) How does digital creativity significantly impact game success? and (2) Are there distinct clusters of creative success patterns across games?

This study set out to better understanding of digital creativity through the approaches of innovation-based competitive advantage and signaling theory. It also proposes a behavioral and data-based creativity measure. With this integration, this study offers an empirical foundation for understanding how digital creativity contributes to competitive advantage in the creative economy. Practically, these findings offer strategic insights for developers, publishers, and policymakers in optimizing the balance between creative investment and pricing strategies to achieve sustainable growth and community engagement in the digital games market.

2 Method

This study uses a quantitative research design with an explanatory approach to empirically test the relationship between digital creativity, pricing strategy, and game success in the Steam ecosystem. This study aims to examine the influence of digital creativity on game success and compare its influence with pricing strategy. The final dataset consists of 9,455 games obtained from the Steam Power Database (SteamDB), after data cleaning and outlier removal, spanning a variety of genres, release periods, and price categories. Each game is treated as a unit of analysis, providing a comprehensive cross-sectional picture of digital market performance in a real-world context.

Digital creativity was measured through a Digital Creativity Index (DCI), which combined three standardized behavioral indicators representing creative performance: creativity residual score (CRS), engagement efficiency index (EEI), and release-normalized traction (RNT). The composite index was calculated as:

$$\mathrm{DCI} = \mathrm{means}(\mathrm{Z_{CRS}}, \mathrm{Z_{EEI}}, \mathrm{Z_{RNT}}) \quad (1)$$

Game success was assessed using two indicators: Game Rating (0–100 scale) and Player Engagement, defined as:

$$Engagement = \log(Review + 1) + \log(peak + 1) \quad (2)$$

To test the four hypotheses, Ordinary Least Squares (OLS) regressions with robust standard errors were estimated as follows:

$$Rating = \beta_0 + \beta_1 DCI + \beta_2 Price + \beta_3 Controls + \varepsilon \quad (3)$$

Standardized coefficients (β) were used to assess the relative influence of digital creativity and price on performance outcomes. The dominance of digital creativity over price was tested using relative importance analysis. Diagnostic evaluation results confirmed that multicollinearity (VIF <3) and heteroscedasticity were within acceptable limits, while Cronbach's α = 0.81 validated the internal consistency of the DCI construct.

To complement the regression analysis, a K-Means Clustering approach was employed to uncover strategic patterns of creative success among games. Clustering was performed on standardized variables (Rating, Reviews, Peak, Price, DCI) using the Elbow Method and Silhouette Score to determine the optimal number of clusters, which was set at $k = 4$. The resulting clusters revealed distinct strategic archetypes, including Creative Hits (high DCI, moderate price, high engagement), Price-Driven Niche (low DCI, high price, limited reach), and Community Builders (low price, high engagement). Hierarchical clustering using Ward's method was conducted for validation, confirming stability across cluster solutions. This analysis provides insight into how the combination of creativity and pricing strategy differentiates success in the digital marketplace.

3 Result and Discussion

To address the research objective of examining how digital creativity influenced game success within the Steam ecosystem, this study empirically tested the proposed relationships using a combination of regression and clustering analyses. The first analytical stage employed OLS Regression to evaluate the direct effect of the Digital Creativity Index (DCI) on game ratings, isolating the impact of creativity from pricing and other market factors[21]. The second stage applied K-Means clustering to uncover distinct strategic archetypes of game success based on behavioral patterns in creativity, engagement, and pricing. This dual approach enabled both a causal assessment of creativity's influence and a pattern-based exploration of how creativity-driven strategies manifest across market segments. The following section presented the empirical findings from these analyses, providing quantitative evidence of how creative innovation, rather than economic accessibility, serves as the principal driver of game performance and strategic differentiation in digital markets.

The scatter plots on the Figure 1. described the relationships between game rating (rtg) and its key predictors: price (prc), digital creativity (dci), followers (fol), reviews (rvw), peak players (peak), and release age (rls), complementing the regression analysis. Among these, digital creativity (dci) demonstrated the most pronounced and consistent positive linear association with game rating, confirming that higher levels of creative innovation correspond with stronger user evaluations and perceived quality. Similarly, reviews (rvw) and followers (fol) showed upward trends, suggesting that games with larger and more active communities tend to receive better ratings, aligning with the role of engagement and social validation as mediating mechanisms in creative success. Conversely, price (prc) and release age (rls) exhibit nearly flat or slightly negative slopes, indicating that neither higher pricing nor older release time significantly enhances rating outcomes. The tenuous connection between top players and their rankings suggests that temporary increases in simultaneous users don't always lead to lasting impressions of quality. Overall, these visual patterns reinforced the statistical findings that digital creativity is the primary driver of game rating, while economic and temporal factors play only supporting or marginal roles in determining success on the Steam platform.

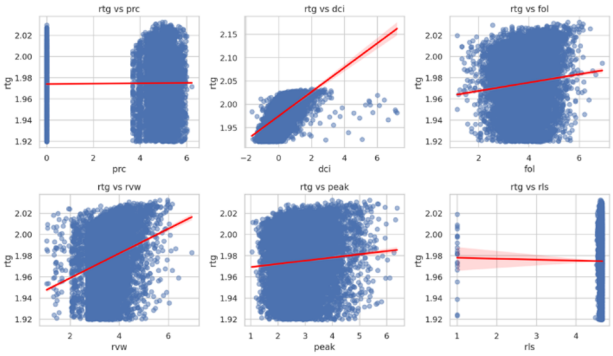

Fig 1. Relationship Rating with Price, DCI, followers, reviews, peak, release time

The regression results as shown in Table 1, consistently underscored the critical role of digital creativity in shaping game performance within the Steam ecosystem. The coefficient for digital creativity (DCI) was positive and highly significant ($\beta = 0.064$, $p < 0.001$), indicating that greater creative differentiation strongly enhanced game success, as reflected in player ratings and engagement metrics. Conversely, price (PRC) showed only a marginal effect ($\beta = 0.00016$, $p < 0.001$), suggesting that economic accessibility alone does not explain performance variation. These results confirmed that creativity drives superior player satisfaction and participation, consistent with innovation-based competitive advantage theory. This pattern implied that part of creativity's influence operates indirectly through engagement mechanisms, aligning with prior findings that creative innovation enhances user interactivity and emotional attachment.

Table 1. The Mediation and Moderation Effect of Digital Creativity on Game Success

	Coefficients	Std Error	t Stat	P-value
Intercept	1,5963	0,00342	465,855	0
dci	0,0643	0,00030	213,647	0
prc	0,0001	5,76E-05	2,808	0,0049959
fol	0,0332	0,00028	118,629	0
rvw	-0,01313	0,00028	-45,3687	0
peak	-0,03732	0,00025	-149,353	0
rls	0,08640	0,00075	114,708	0

Table 2. Summary of Linear Regression Statistics

Regression Statistics	
Multiple R	0,91973601
R Square	0,84591434
Adjusted R Square	0,84581648
Standard Error	0,010668
Observations	9455
df residual	9448
F	8644,75693
Significance F	0

The clustering synthesis as shown in Figure 2 revealed three distinctive strategic archetypes of game success that coexist within the Steam ecosystem, reflecting how creativity, pricing, and engagement interact as complementary yet competing drivers of performance. Cluster 1 (“Creative Hits”) stands out as the most effective configuration, marked by exceptional creativity, robust engagement, and ratings that surpass the average, illustrating that differentiation driven by innovation offers a lasting competitive edge. This cluster validated the premise that creative innovation fosters both intrinsic value (through player satisfaction) and extrinsic value (through visibility and virality), in line with innovation-based competitive advantage theory (Teece, 2018; Weerawardena, 2003). Cluster 0 (“Price-Oriented Performers”), by contrast, represented games that maintain performance through brand equity or pricing strength rather than creativity, highlighting a more transactional approach to success. Meanwhile, Cluster 2 (“Community Builders”) captured games leveraging affordability and accessibility to engage large audiences, aligning with freemium and community-driven diffusion models (Hamari et al., 2017). Collectively, these clusters illustrated that while economic and community strategies can sustain short-term engagement, creativity-driven innovation remained the most influential pathway to long-term game success, transforming artistic distinctiveness into measurable performance outcomes within digital market ecosystems.

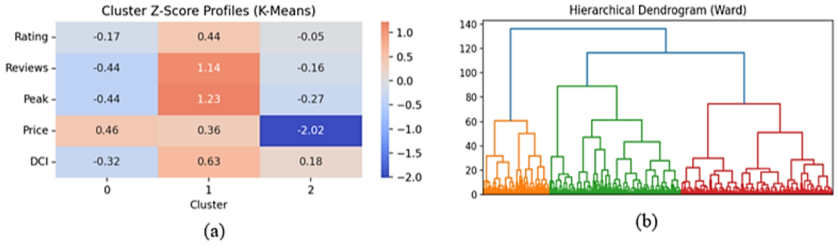

Fig 2. Clustering (a) and Dendogram Decision (b) Result

The findings of this study indicate that digital creativity is the most influential factor in determining game success, while strengthening the relevance of the innovation-based competitive advantage theory [7], [8]. There was a significant positive correlation between Digital Creativity Index (DCI) with player ratings and engagement level. Prior studies that have note the importance of creative differentiation to enhances user satisfaction and emotional immersion (Choi et al., 2018). Conversely, price exhibited only a weak effect, indicating that economic accessibility alone cannot drive success. When engagement-related variables such as reviews and followers were introduced, creativity’s direct impact decreased, suggesting a partial mediation effect, where creativity influences success indirectly through engagement and community interaction (Hamari et al., 2017). As mentioned in the literature review, signaling theory has demonstrated that players interpret price as a signal of quality when creativity is evident. In contrast to previous research that indicated a compromise between innovation and cost-effectiveness, this study demonstrates that inventive creativity allows games to achieve higher price points while still maintaining player engagement.

4 Conclusion

The purpose of the current study was to examine how digital creativity influences game success within the Steam ecosystem, integrating perspectives from innovation-based competitive advantage and market signaling theory. The analysis of 9,455 games using regression and clustering techniques demonstrated that digital creativity exerts a stronger and more consistent effect on performance outcomes than pricing, confirming that creative differentiation is a key strategic capability in digital markets. Creativity was shown to enhance player ratings and engagement both directly and indirectly through community interaction, while its positive interaction with price indicated that innovation amplifies perceived value and supports premium positioning.

The research results successfully bridge the conceptual gap through the innovation-based competitive theory and signaling theory approaches to explain the construction of digital creativity towards game successes. The findings also identified three strategic archetypes of success: Creative Hits, Price-Oriented Performers, and Community Builders, revealing that sustained advantage arises from creativity-driven innovation rather than economic accessibility alone. The findings of this study have several practical implications. Game developers have the necessity to use creativity a a strategic asset that boosts both market performance and perceived worth. Taken together, policymakers should foster creative ecosystem that incentivize originality, innovation, and transparency in data. Future research might explore the model by incorporating variables such as genre, team diversity, and platform algorithms to better capture how creativity and technological factors jointly shape competitive outcomes.

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