The Impact of Content-Based Game Narrative Design on Brand Loyalty - The Mediating Effect of Immersive Experience

Qiao Yue*

China University of Geosciences, Wuhan, Hubei, China

*Corresponding author: qy944060487@gmail.com

Abstract. Content-Based Game is a game where the game company builds and continuously fills the core content of the game with high quality, focusing on the quality of the user's experience in the game's content and the enduring space for exploration and collection. This study examines how Content-Based Game's Narrative Design affects users' Brand Loyalty. After quantitative research, it was found that Content-Based Game's Narrative Design can significantly and positively influence users' Brand Loyalty, and immersion plays a Partial Mediation effect. This study suggests that Content-Based Game producers should focus on producing high-quality story plot, attractive characters, and appropriate audio-visual art to enhance user stickiness by deepening users' sense of immersion, which is of practical significance to the design and development of Content-Based Games.

Keywords: Content-Based Game; Narrative Design; Immersive Experience; Brand Loyalty.

1. Introduction

It has been decades since the birth of video games in the 1950s, and different kinds of games are being continuously developed, and today video games have indisputably grown to be one of the mainstream forms of entertainment in contemporary culture. According to the Global Game Market Report 2024 published by Newzoo, the global game market revenue could reach $187.7 billion in 2024, with a total of 3.42 billion gamers globally, with the United States, China, Japan, and South Korea at the top of the list [1]. Taking China as an example, China has now become one of the largest game markets in the world, and all kinds of games have a wide audience and high market demand in the Chinese market, attracting a large number of domestic and foreign game manufacturers to pay attention to and enter the market. Along with the continuous expansion of the game market scale, the competition in the game market has become increasingly fierce, and the entry of many manufacturers has brought prosperity to the game market and intensified the competition among game products, and consequently, users are more in pursuit of high-quality, innovative games that can bring a better playing experience.

Compared with traditional competitive, gate-crashing and other Gameplay-Based Games that focus on gameplay and mechanics, Content-Based Game focuses more on its own game content, with high-quality, distinctive art style and finesse, immersion in script and plot performance, music sound effects and voice acting infectiousness, etc. as the selling point, attracting players to actively play or pay for relevant content by consuming it continuously. Role-playing games (RPGs) and adventure games (AVGs), especially those that have been in operation for a long period of time, are mostly Content-Based Games and tend to be more common in mobile games and cross-platform games.

Nowadays, with the increase of users' pursuit of high-quality games, the concept of “gameplay first” of traditional Gameplay-Based Games is gradually encountering a bottleneck in development, and the cost of traditional volume-buying techniques is also rising, game companies, especially small and medium-sized game companies, are difficult to enhance their own differentiated competitiveness in terms of gameplay, and therefore more and more game companies are turning their attention to Content-Based Games that pay more attention to game content. Therefore, more and more game companies have started to focus on Content-Based Game, which emphasizes more on game content. Due to the content-centered attributes of Content-Based Game, this type of game tends to rely more on the game company's control over the quality of the content, the frequency of updates, and the

retention rate of users. By producing excellent plots, characters and scenes, and providing users with better quality content, game companies can establish a deeper emotional connection with users, deepen users' Brand Loyalty, and ultimately reach the goal of extending the game's operation cycle and creating more commercial value. Taking the Chinese game "Genshin Impact" as an example, since its official opening in September 2020, it has gained more than 400 million game users through its excellent Narrative Design, and has stood out from many Gameplay-Based Games on the bestseller lists of many countries for many times. This shows that the Narrative Design of Content-Based Game has an extremely important impact on users' Brand Loyalty.

In theoretical term, most existing studies focus on traditional loyalty drivers such as consumption motivation, user satisfaction, and payment behavior brought by Gameplay-Based Games, while studies on Narrative Design and Immersion, which are the core mechanisms of Content-Based Game that have been steadily growing in recent years, are more fragmented, e.g., most of the studies have only verified the single relationship of "Narrative Design → Immersion" or "Immersion → Loyalty", and Immersive Experience is often regarded as an outcome rather than a mediator variable. On the other hand, traditional Brand Loyalty research focuses on physical goods, while Content-Based Game, as a virtual product, is characterized by high interactivity, strong emotional bonding, and continuous content update. This study focuses on the association model of the impact of Narrative Design, an important element of Content-Based Game, on users' Brand Loyalty, and provides a new theoretical framework for game research by revealing the positive effect of Narrative Design on users' Brand Loyalty.

In practical terms, this study focuses on the impact of Narrative Design on users' Brand Loyalty, which can provide multi-dimensional immersion optimization strategies for future Content-Based Game companies that attach more importance to long-term operation, and help optimize the business path, which can not only help the game company to make the appropriate resource allocation decisions and user retention strategies, but also reduce redundant buying through narrative-driven natural communication. It can also help game companies realize the virtuous cycle of "content feeding traffic", and ultimately achieving the goal of increasing the life cycle of game products and enhancing the value of the product life cycle.

1.1. The Impact of Narrative Design on Brand Loyalty

Chen Yonglan pointed out in his research on role-playing game (RPG) narratives that most modern game narrative theories use the results of classical narratology, and according to the summary of past scholars, narratives are divided into two parts: Story, which emphasizes the content, and Discourse, which emphasizes the mode of expression. Story contains events and existents, while existents contain characters and scenes. Current research on game narratives focuses on the roles of events, characters, and scenes, so game narratives can be divided into three dimensions: plot, character, and scene [2]. Plot Design supports the game story development, promotes the game development through linear narrative, sandbox narrative and other narrative models, prompts the player to deepen the memory and understanding of the plot, deepens the feeling of the game narrative, constructs the emotional connection between the player and the game, and builds a special game meaning for the player. The game character is the player's incarnation and agent in the game world, and the player obtains the game experience by manipulating the Character Interaction in a variety of ways. Game makers can promote the development of the game plot and characterization through the construction of charismatic characters, so that players can perceive a more emotionally impactful narrative, and ultimately establish an emotional connection and attachment with the characters. As for the scene, although the game belongs to the virtual world, with the continuous progress of technology in recent years, many games have been able to build more realistic or more consistent with the world view of the game scene. Audiovisual Elements, i.e., visual art and music effects, are important to help users deepen their experience in the game, and to facilitate players to dispatch their existing experience and knowledge to recognize and understand the game narrative.

Liu Zhenkai, in his research on the competitive strategy of the game market through the analysis of big data of user evaluation, found that investing more efforts in art, music, narrative and other aspects can create an immersive game atmosphere for players. The player's experience in the game and the superiority of the feedback they receive directly determines the player's first impression and willingness to stay, i.e., the game quality and service level are the key factors affecting user loyalty, so the game company should also pay attention to the user feedback and optimize the game design [3]. Content-Based Game Narrative Design can satisfy the different needs of different types of players and thus promote their Brand Loyalty. Previous empirical studies have also shown that game content can indeed affect Brand Loyalty, i.e., the better the Plot Design, the better the Character Interaction, and the more appropriate the Audiovisual Elements, the higher the Brand Loyalty of the users. Accordingly, this study proposes the following hypotheses:

H1: Content-Based Game Narrative Design has a positive effect on users' Brand Loyalty.

H1a: Plot Design in Content-Based Game Narrative Design has a positive effect on users' Brand Loyalty.

H1b: Character Interaction in Content-Based Game Narrative Design has a positive effect on users' Brand Loyalty.

H1c: Audiovisual Elements in Content-Based Game Narrative Design has a positive effect on users' Brand Loyalty.

1.2. The Impact of Narrative Design on Immersive Experience

Sadowski W pointed out that the immersive property in the game environment can strengthen the immersion brought by the game, so that the game can directly talk to the player's senses, and then consolidate the emotional bond created between the player and the whole game environment [4]. Jiang Xiaolei's research on emotion transfer in games points out that the plot, characters, props and scenes in games can all serve as opportunities to cause users to express certain emotions. And games bring immersion so that they can better help participants construct individual memories of emotional continuity, which also makes games can be used as a medium for transmitting and expressing emotions (e.g., serious emotions such as sadness, mourning, etc.) [5]. In his study of narrative and immersion in tourism performing arts experience, Wang Zhong points out that narrative plays a dual role in Immersive Experience. Narrative can, on the one hand, give the space a plot, background and symbolic meaning, and on the other hand, it can prompt the experiencer to enter a deeply focused Immersive Experience through the Narrative Design of Plot and Character, and ultimately reach the goal of guiding the audience to multiple engagements on multiple levels, including spatial and emotional [6]. Since Content-Based Game also possesses narrative attributes in virtual space such as plot, character, scene and other traditional art forms, the above theory can also be applied to the field of games, i.e. the better the Plot Design, the better the Character Interaction, and the more appropriate the Audiovisual Elements, the better the Immersive Experience will be for the user. Accordingly, this study proposes the following hypothesis:

H2: Content-Based Game Narrative Design has a positive effect on users' Immersive Experience.

H2a: Plot Design in Content-Based Game Narrative Design has a positive influence on users' Immersive Experience.

H2b: Character Interaction in Content-Based Game Narrative Design has a positive effect on users' Immersive Experience.

H2c: Audiovisual Elements in Content-Based Game Narrative Design have a positive influence on users' Immersive Experience.

1.3. The Relationship Between Immersive Experience and Brand Loyalty

With the rapid development of Internet technology, the sense of immersion in the virtual world has received special attention from researchers. Chen Xiaolei pointed out in her study on BILIBILI video website users that video websites can enhance users' immersion in the process of browsing videos by enhancing resource updates, communicating interactivity, and personalized

recommendations for user habits. This requires video producers to base their ability to produce high-quality content and continuous output on the ability to ultimately be able to significantly and positively influence user loyalty [7]. Ding Qian, in her research on game customization, found that immersion plays a significant mediating role between game customization, i.e., the extent to which individuals create, select, and change technologies, services, and commodities according to their personal preferences (e.g., customizing the appearance of the character, equipment, and skills, etc.), and online game loyalty, and that immersion can significantly and positively influence game users' Brand Loyalty [8]. Content-Based Game as a virtual commodity, one of the values provided to customers is the psychological experience, the higher the Immersive Experience, the stronger the user's willingness to continue to play the game, and the higher the loyalty to the game. Accordingly, this study proposes the following hypotheses:

H3: User's Immersive Experience has a positive influence on Brand Loyalty.

In summary, according to the overall research framework and hypotheses proposed in this study, it can be found that Narrative Design not only directly affects Brand Loyalty, but also indirectly affects Brand Loyalty through the mediating role of Immersive Experience. Accordingly, this paper proposes the following hypotheses:

H4: Immersive Experience has a mediating effect between Content-Based Game Narrative Design and user Brand Loyalty.

H4a: Immersive Experience has a mediating effect between Plot Design in Content-Based Game Narrative Design and User Brand Loyalty.

H4b: Immersive Experience has a mediating effect between Character Interaction and User Brand Loyalty in Content-Based Game Narrative Design.

H4c: Immersive Experience has a mediating effect between Audiovisual Elements in Content-Based Game Narrative Design and User Brand Loyalty.

1.4. Model Construction

The purpose of this study is to explore the influence factors of user loyalty from the perspective of Content-Based Game Narrative Design. Based on the literature research, this study constructs a hypothesis model about the influence of Content-Based Game Narrative Design on user Brand Loyalty by taking Narrative Structure Theory and Narrative Transmission Theory as the theoretical basis and combining with the characteristics of Content-Based Game. Among them, the Content-Based Game Narrative Design is taken as the independent variable, divided into three dimensions of Plot Design, Character Interaction and Audiovisual Elements, user Brand Loyalty is taken as the dependent variable, and Immersive Experience is taken as the mediator variable, as shown in Figure 1.

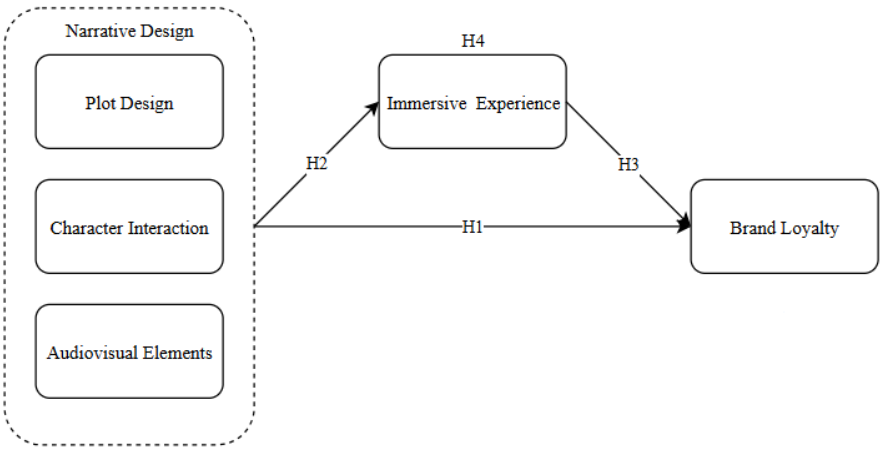

Fig. 1 model illustration

2. Methodology of the study

2.1. Subjects of study

In the data collection stage, the questionnaires used in this study were produced and distributed through the Questionnaire Star platform(www.wjx.cn), and were distributed in groups or one-on-one on online platforms such as WeChat, QQ, HoYoLAB, and BILIBILI. A total of 352 questionnaires were eventually recovered, and invalid questionnaires such as those who hadn't played Content-Based Game and those who hadn't filled in the answers according to the requirements were excluded, resulting in 306 valid questionnaires, with an effective rate of 86.9%, of which a total of 164 were males, with a ratio of 53.59%; a total of 261 were aged between 18 and 25 years old, with a ratio of 85.29%; a total of 181 were with the highest level of education in bachelor's degree/junior college, with a ratio of 59.15%; the average daily playing time is 4.05 hours.

2.2. Questionnaire Design

2.2.1 Narrative Design Scale

This study refers to the scale summarized and designed by Yao Tao, Lewis, Zhou Kui, etc.[9][10][11] , which was compiled in the context of the actual situation, with a total of 8 entries. For example, “I think the game's main and branch story content is very rich.” “Interacting with my favorite characters in the game can be enjoyable.” “The design of the maps and scenes in the game is aesthetically pleasing to me.” and so on. The questionnaire was based on a 5-point Likert scale (1=very non-conforming, 5=very conforming), with higher scores indicating better Content-Based Game Narrative Design. The questionnaire had a Cronbach.α=0.924, a KMO=0.941, a cumulative variance explained ratio = 77.92%, and a significance = 0.000 in this study, in which the three dimensions of Plot Design, Character Interaction and Audiovisual Elements had a Cronbach.α coefficient of 0.828, 0.840, and 0.791, and the factor loading coefficients of the corresponding dimensions are all located between 0.58 and 0.86, which satisfy the criteria for reliability and validity tests in this study.

2.2.2 Immersive Experience Scale

This study refers to the scale summarized and designed by Yang Yifan [12], which was compiled in the context of the actual situation, with a total of five entries. For example, “My emotions rise and fall with the plot of the game and I am completely immersed in the game.” etc. The questionnaire is based on a 5-point Likert scale (1 = very non-conforming, 5 = very conforming), with higher scores indicating a better Immersive Experience for the user. The questionnaire had a Cronbach.α = 0.892, a KMO = 0.888, a cumulative variance explained = 69.77%, a significance = 0.000, and the factor loading coefficients were all located between 0.82 and 0.85, which satisfy the criteria for reliability and validity tests in this study.

2.2.3 Brand Loyalty Scale

This study refers to the scale summarized and designed by Wang Manxin [13], which was compiled in the context of the actual situation, with a total of five entries. For example, “I am willing to continue playing the game (or subsequent new installments in the series).” etc. The questionnaire was based on a 5-point Likert scale (1=very non-compliant, 5=very compliant), with higher scores indicating higher Brand Loyalty among users. The questionnaire had a Cronbach.α = 0.853, a KMO = 0.861, a cumulative variance explained = 63.08%, a significance = 0.000, and the factor loading coefficients were all located between 0.74 and 0.85, which satisfy the criteria for reliability and validity tests in this study.

3. Results of the study

3.1. Correlation Analysis of Narrative Design, Immersive Experience, and Brand Loyalty

The mean scores of Narrative Design, Immersive Experience, and Brand Loyalty were correlated by SPSS software, and Table 1 was obtained.The three dimensions of Narrative Design, Plot Design, Character Interaction, and Audiovisual Elements were significantly positively correlated with Immersive Experience and Brand Loyalty, respectively, and Immersive Experience was significantly positively correlated with Brand Loyalty.

Table 1. Descriptive statistics results and correlation analysis between variables

	Plot Design	Character Interaction	Audiovisual Elements	Immersive Experience	Brand Loyalty
Plot Design	1				
Character Interaction	.665**	1			
Audiovisual Elements	.672**	.627**	1		
Immersive Experience	.706**	.722**	.690**	1	
Brand Loyalty	.753**	.739**	.688**	.814**	1

3.2. Regression Analysis of Narrative Design, Immersive Experience and Brand Loyalty

3.2.1 Regression Analysis of Narrative Design and Brand Loyalty

The mean scores of Narrative Design and Brand Loyalty were done regression analysis by SPSS software, and Table 2 and Table 3 were obtained. in which Adjusted R^2=0.688, the regression model fit was good, significance level<.001, reached the significance level. Among them, Plot Design has a significant positive effect on Brand Loyalty (β=0.370, SE=0.044,P<.001**) , hypothesis H1a is confirmed; Character Interaction has a significant positive effect on Brand Loyalty (β=0.359, SE=0.041, P<.001**) , hypothesis H1b is confirmed; and Audiovisual Elements has a significant positive (β=0.214, SE=0.041, P<.001**), hypothesis H1c is confirmed. In summary, hypothesis H1 is confirmed.

Table 2. Narrative design and Brand Loyalty regression model parameters

R	**R^2**	**Adjusted R^2**	**Standard Error**	**F**	**significance level**
.831a	.691	.688	.35467	225.407	<.001[b]

Table 3. Narrative design and Brand Loyalty regression analysis results

	Unstandardized regression coefficient		**Standardized regression coefficient**		
	B	Standard Error	β	t	significance level
constant	.528	.136		3.878	<.001**
Plot Design	.339	.044	.370	7.767	<.001**
Character Interaction	.325	.041	.359	7.921	<.001**
Audiovisual Elements	.190	.041	.214	4.690	<.001**

3.2.2 Regression Analysis of Narrative Design and Immersive Experience

The mean scores of Narrative Design and Immersive Experience were done regression analysis by SPSS software, and Table 4 and Table 5 were obtained. in which Adjusted R^2=0.649 , the regression model fit was good, and significance level<.001, reached the level of significance. Among them, Plot Design has a significant positive effect on Immersive Experience (β=0.278, SE=0.050, P<.001**), hypothesis H2a is confirmed; Character Interaction has a significant positive effect on Immersive Experience (β=0.364, SE=0.046, P<.001**), hypothesis H2b is confirmed; Character Interaction has a significant positive effect on Immersive Experience (β=0.275, SE=0.046, P<.001**), hypothesis H2c was confirmed. In summary, hypothesis H2 was confirmed.

Table 4. Narrative design and Immersion Experience regression model parameters

R	R^2	Adjusted R^2	Standard Error	F	significance level
.806a	.649	.646	.40208	186.143	<.001[b]

Table 5. Narrative design and Immersion Experience regression analysis results

	Unstandardized regression coefficient		Standardized regression coefficient		
	B	Standard Error	β	t	significance level
constant	.437	.154		2.835	.005**
Plot Design	.271	.050	.278	5.475	<.001**
Character Interaction	.350	.046	.364	7.543	<.001**
Audiovisual Elements	.259	.046	.275	5.647	<.001**

3.2.3 Regression Analysis of Immersive Experience and Brand Loyalty

The mean scores of Immersive Experience and Brand Loyalty were done regression analysis by SPSS software, and Table 6 and Table 7 were obtained. in which Adjusted R^2=0.661, the regression model fit was good, and significance level <.001, reached the level of significance. Among them, Immersive Experience has a significant positive effect on Brand Loyalty (β=0.814, SE=0.031, P<.001**), hypothesis H3 was confirmed.

Table 6. Immersion Experience and Brand Loyalty regression model parameters

R	R^2	Adjusted R^2	Standard Error	F	significance level
.814a	.663	.661	.36956	596.981	<.001[b]

Table 7. Immersion Experience and Brand Loyalty regression analysis results

	Unstandardized regression coefficient		Standardized regression coefficient		
	B	Standard Error	β	t	significance level
constant	.927	.128		7.226	<.001**
Immersive Experience	.766	.031	.814	24.433	<.001**

3.3. The Mediating Role of Immersive Experience Between Narrative Design and Brand Loyalty

The mean scores of Narrative Design, Immersive Experience and Brand Loyalty were done regression analysis by SPSS software, and Table 8 and Table 9 were obtained. in which Adjusted R^2=0.749, the regression model fit was good, and significance level <.001, reached the level of significance. Among them, Plot Design has a significant positive effect on Brand Loyalty (β=0.254, SE=0.041,P<.001) , Character Interaction has a significant positive effect on Brand Loyalty (β=0.207, SE=0.040,P<.001**), Audiovisual Elements has a significant positive effect on Brand Loyalty (β=0.100, SE=0.038, P=0.021*) , Immersive Experience has a significant positive effect on Brand Loyalty (β=0.416, SE=0.046, P<.001**). From the previous data and the three-step regression method of mediation analysis, it can be seen that Immersive Experience has Partial Mediation effect between Narrative Design and Brand Loyalty. In summary, hypotheses H4a, H4b, and H4c are confirmed, i.e., hypothesis H4 is confirmed.

Table 8. Narrative design, Immersive Experience and Brand Loyalty regression model parameters

R	R^2	Adjusted R^2	Standard Error	F	significance level
.867a	.752	.749	.31837	228.246	<.001[b]

Table 9. Narrative design, Immersive Experience and Brand Loyalty regression analysis results

	Unstandardized regression coefficient		Standardized regression coefficient		
	B	Standard Error	β	t	significance level
constant	.357	.124		2.880	.004*
Plot Design	.233	.041	.254	5.671	<.001**
Character Interaction	.187	.040	.207	4.674	<.001**
Audiovisual Elements	.088	.038	.100	2.314	.021*
Immersive Experience	.391	.046	.416	8.590	<.001**

4. Conclusion

This study found that the Narrative Design of Content-Based Game not only directly affects user Brand Loyalty, but also indirectly affects user Brand Loyalty through the mediating role of immersion. This finding has several theoretical and practical implications. First, the significant positive effect of Narrative Design on user Brand Loyalty and the positive role of Immersive Experience as a mediating effect between Narrative Design and user Brand Loyalty were empirically tested. This provides reliable theoretical support and thinking inspiration for subsequent research targeting related content. Second, during the production and operation of Content-Based Game, the narrative quality of game content can directly affect user Brand Loyalty, user retention rate, willingness to pay, and other contents of concern to multiple game companies. That is, excellent worldview structure, wonderful plot content, emotionally resonant characterization, beautiful scene art, appropriate music and sound effects, and other content can play a positive role in prolonging users' heart-flow duration, enhancing emotional attachment, improving user retention, and creating long-term value. On the other hand, fragmented or even low-quality content design is even less likely to increase user immersion. This means that companies that choose Content-Based Game as their development goal should pay more attention to the portrayal of plot, characters and scenes. Third, in the text analysis for the open-

response questions in the questionnaire, it was shown that light or casual players valued the plot of the game more, while heavy or hardcore players valued the gameplay more. In Content-Based Games that rely more on Narrative Design, users of games with more User-Generated Content (UGC) creation support for cross-media immersive narratives (e.g., Genshin Impact, HONKAI: StarRail, etc.) are more likely to form long-term stickiness.

From a theoretical point of view, this paper verifies the key intermediary role of Immersive Experience in the path of "Narrative Design → Brand Loyalty" through empirical research, reveals the psychological transmission mechanism of Narrative Design influencing users' behavior, and provides quantitative support for subsequent research on narrative transmission theory in the field of gaming. We clarify the differential impact of the sub-dimensions of Narrative Design (Plot Design, Character Interaction, and Audiovisual Elements) on user loyalty, and provide a refined analytical framework for subsequent studies. An emotional binding-driven model for digital content products is proposed, pointing out the core elements affecting virtual brand loyalty. From a practical point of view, this paper provides scientific design guidelines for Content-Based Game development, inspiring producers to optimize the quality of game content by adjusting the priority of resource allocation, innovating the mechanism of internal purchase, and formulating differentiated operation strategies, thus achieving the purpose of extending the operational life cycle of the game, and moreover, it can promote the double enhancement of the cultural value and social benefits of the game industry. The contribution of this paper is not only limited to the game field, but also provides a "narrative-driven" paradigm reference for cross-field applications such as live e-commerce and education gamification.

This paper explores the mechanism and path of the influence of Narrative Design of Content-Based Game on user loyalty through an empirical study that introduces immersion as a mediating variable. Reflecting on the research process, the following shortcomings still exist. First, this study only focuses on Content-Based Game, but the academic boundaries of Content-Based Game have not been established with complete precision so far. Many games also do not only emphasize content, but focus on multiple aspects such as content, gameplay, and numerical value in different degrees. Therefore, subsequent research can consider introducing multiple elements such as users' consumption willingness, gameplay design, and numerical value-driven utilitarian consumption ideology for a more complete study. Second, the questionnaires in this study were distributed on China's game social platforms, and the survey samples were mostly students and other young groups, and mostly players of specific game genres such as role-playing games (RPG), which is still insufficient in its universality, and there is still room for improvement in the significance of empirical results for the profitability model of internationalized game companies. These issues are still worthy of more in-depth discussion in subsequent studies.

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