

The Quality Evaluation Indicator System for Applying Traditional Visual Elements in Game Art: Based on the Delphi Method

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Abstract

Nowadays, the video game industry is booming, and the integration of traditional visual elements into game art has become a trend. This not only gives games a unique artistic style and meets the requirements of "localization", but also plays an important role in cultural inheritance and market competition. However, the current application of traditional visual elements in game art is fraught with problems, such as the misuse of cultural elements and the distortion of history, which has caused many controversies and negative experiences for players. Due to the lack of a scientific and systematic evaluation system, it is difficult to effectively evaluate the application effect of traditional visual elements in project design. Therefore, this study adopts the Delphi method to construct an evaluation indicator system. Through literature research, five primary indicators and sixteen secondary indicators were initially proposed. After two rounds of soliciting expert opinions, the indicators were adjusted and optimized. The final system includes five primary indicators and sixteen secondary indicators, and the corresponding weights were calculated. This system has significant value in game research and development design, classical case evaluation, and academic research, and provides strong support for the rational application of traditional visual elements in the game industry.

Keywords: Game Art Design, Traditional Visual Elements, Delphi Method, Evaluation System

Introduction

Driven by the digital wave, the video game industry is booming at an unprecedented pace, the number of players is growing, and games have become an indispensable form of

entertainment in people's lives, profoundly influencing the cultural consumption and social patterns of contemporary people. Currently, video games on the market are actively seeking innovation in art design by incorporating a large number of traditional visual elements, and this design strategy has multiple positive implications (Sari & Kurniawan, 2024; Harmaningsih et al., 2024). From the perspective of user experience, it accurately meets the cultural needs of local players (He, 2021) and brings a sense of closeness and belonging to players; at the cultural and educational level, it can effectively stimulate users' interest in learning traditional culture and enhance the effect of cultural inheritance and education (Shofiyannajah & Prasetyo, 2021); in terms of market competition, unique traditional visual elements can be a differentiating competitive advantage for games, enabling them to stand out in highly homogeneous markets (Lu, 2022).

However, the process of applying traditional visual elements in games is not smooth sailing, and there are many problems. Take Ubisoft's *Assassin's Creed Valhalla* as an example. There is a misuse of architectural elements from different cultures in its architectural design (López, 2021), which undermines the authenticity of the game's cultural background and raises questions among players about the professionalism of the game's culture. Similarly, in *Assassin's Creed: Odyssey - Journey of Discovery*, Champion (2020) pointed out that non-player characters (NPCs) lack cultural and regional awareness and do not fully represent the cultural characteristics of the regions in the game. Looking at the Chinese New Year skins of *Twitch* released by *League of Legends* in 2020, which caused strong dissatisfaction among Chinese players due to their design deviating from traditional Chinese festival elements (Hu et al., 2025). This indicates that once a game deviates in the use of cultural elements, it may lose the support of players.

Tencent's *Honor of Kings* has also been controversial in China for its use of traditional visual elements. The game's character designs are based on ancient historical and mythological figures, such as portraying the Tang Dynasty poet Li Bai as an assassin and adapting the ancient male assassin Jing Ke as a sexy and revealing female character. Liu (2024) criticizes these as arbitrary changes to history. Nuwa in the game is also designed not to resemble the image depicted in traditional myths. Wang (2021) argues that the design of Nuwa is far from the traditional "Mother Earth". These adaptations are accused of distorting history and misleading players' perceptions of traditional culture. In 2023, *Honor of Kings* was even subject to a public interest lawsuit for distorting history, trampling on traditional culture, and misleading minors into having a wrong perception of history (Chen, 2023).

From these cases, it can be seen that there are serious problems in the application of traditional visual elements in game art design, and many negative effects have already occurred. Numerous studies have shown that the proper application of traditional visual elements in games can arouse players' interest, help them understand history, and allow them to experience the beauty of the images and the inner spirit of the culture (Cui et al., 2021). However, the incorrect application of traditional visual elements or the inappropriate presentation of cultural heritage in games may cause cognitive biases among players and have a negative impact on the dissemination and inheritance of traditional culture (Liu, 2024).

However, current research mainly focuses on analyzing and criticizing the accuracy and authenticity of traditional visual elements (Que et al., 2025), while empirical and quantitative

analyses are relatively rare (Mao, 2024). There is a lack of a scientific and systematic evaluation system for evaluating the use of traditional visual elements, and most remain at the level of subjective perception.

According to the user-centred design theory, product design and development should fully consider user experience and feedback. A scientific and reliable evaluation indicator system is of great guidance for game art design and the effect of cultural communication. However, due to the lack of unified evaluation standards, it is difficult to accurately assess the design effect and cultural value of the traditional visual elements applied in the game art design process. This ultimately leads to uneven picture quality in game works, seriously hindering the inheritance and innovation of traditional culture in the game field.

How to use scientific methods to construct a quality evaluation indicator system for the application of traditional visual elements in game art that can balance cultural accuracy, creative adaptation and user experience has become an urgent problem to be solved. In this context, the Delphi method, with its unique advantages, has become an ideal choice for building an evaluation indicator system that is of irreplaceable importance for promoting the healthy development of the game industry and the inheritance and innovation of traditional culture.

Methodology

The Delphi method is used to reach consensus, often for forecasting or research on topics lacking robustness (Taylor, 2020). This method is used to construct the evaluation indicator system with the advantages of reliability, authority and feasibility. In the Delphi method, researchers reach consensus by controlling feedback. All expert members do not meet in person, but communicate by letter. This removes the influence of authority and allows experts to make their own judgments independently (Okoli & Pawlowski, 2004). After 2 to 4 rounds of feedback, a consensus on the expert opinion is reached (Taylor, 2020). The specific research process is illustrated in Figure 1:

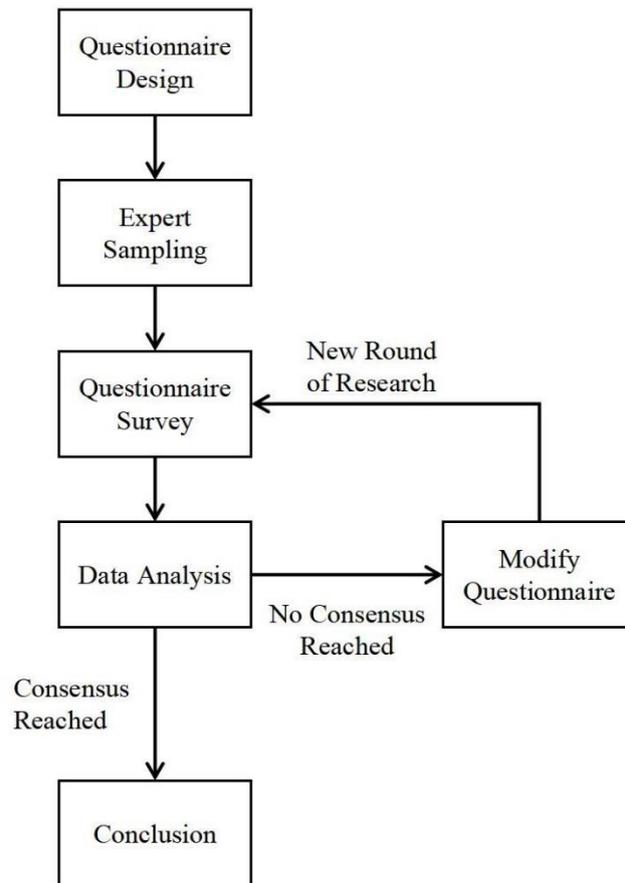


Figure 1. Delphi process

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Indicator Design

This study systematically reviewed relevant academic papers, from which 16 secondary indicators were extracted. Subsequently, a synthesis of five first-level indicators was derived, informed by the connotations of the secondary indicators. They are: Cultural Connotations, Objective and Accurate, Creative Adaptation, Artistic Style, and User Experiences (see Table 1) :

- (1) Cultural Connotations: The cultural traits contained in traditional visual elements. It includes historical background, values, symbolic features, national traditions, spiritual connotations, etc. It is manifested through visual symbols, graphic patterns, etc.
- (2) Objective and Accurate: In game art design, traditional visual elements should be treated and handled objectively to avoid subjective bias. At the same time, present traditional visual elements accurately.
- (3) Creative Adaptation: Incorporate the virtual world view of the game, add novel ideas and creativity, and make appropriate, reasonable, and logical adaptations of traditional elements.
- (4) Artistic Style: The unique artistic personality and appearance demonstrated by art design in terms of form, technique and aesthetic features. It embodies the artistic aesthetic value of the game.
- (5) User Experiences: refers to how a user feels when experiencing the game's visuals and the traditional visual elements it contains.

Table 1

Preliminary Constructed indicator and Their Connotations1

First-Level Indicator	Secondary Indicator	Indicator Description	Literature Reference
Cultural connotations	Cultural communication	The extent to which the cultural meanings and values carried by traditional visual elements are accurately conveyed and understood in the game.	Lu, 2022; Wang & Wang, 2025
	Cultural depth	Is the depth of the game's exploration and presentation of the cultural connotations contained in traditional visual elements merely superficial or can it deeply embody the core spirit of the culture?	
	Cultural limitations	The application of traditional visual elements in the game is in line with real-world usage conditions and limitations.	
Objective accurate	Objectivity	Present traditional visual elements objectively and avoid subjective biases and stereotypes, etc.	Lu, 2023; Balela & Mundy, 2016
	Accuracy	The degree to which the traditional visual elements applied in the game conform to the traditional cultural archetypes in terms of form, color, meaning, etc.	
	Detail presentation	Does the traditional visual elements applied in the game present the original details?	
Creative adaptation	Innovative ideas	The traditional visual elements applied in the game, whether to add new creativity and ideas to infuse the traditional elements with new vitality and modernity.	Min & Lee, 2016
	Logically sound	Newly added ideas/thoughts, whether they are reasonable and logically consistent.	
Artistic style	Style fit	The degree to which traditional visual elements are in harmony with the overall artistic style of the game, including different style types such as realistic, cartoon, fantasy, etc.	Yang, 2024; Shi & Han, 2024
	Aesthetic value	Whether the application of traditional visual elements has high aesthetic value and can bring visual enjoyment and aesthetic experience to players.	

	Uniqueness	The artistic style of the traditional visual elements applied, whether distinctive.	
User experience	Recognizability	Players can easily recognize the difficulty level of traditional visual elements in the game, and clear recognition helps players better understand and feel traditional culture.	Yang, 2024; Cui et al., 2021; Abdillah et al., 2023
	Immersion	Can the application of traditional visual elements enhance the immersion of the game, making players feel as if they were in a virtual world with traditional cultural characteristics?	
	Entertainment	Whether traditional visual elements add fun to the game, such as through ingenious design or interactive ways that allow players to experience the charm and pleasure of traditional culture during the game.	
	Cultural dissemination	The traditional visual elements applied contribute to the dissemination and promotion of traditional culture.	

Expert Selection

It is generally believed that in order to ensure the credibility of the Delphi method, the number of experts should not be less than 10 (Cochran, 1983). However, once the group size exceeds 30 people, it is unlikely to generate new ideas. Therefore, 13 to 30 people is an appropriate number (Lilja et al., 2011).

This study obtained expert information through web search, telephone consultation, literature reports and recommendations from industry experts. Considering the characteristics of research related to traditional culture and the field of game art design, 17 experts were selected in China and Malaysia: (a) A total of 8 doctorates and associate professors from universities. Five of them were teachers specializing in game art design, animation art design, illustration design, and graphic design. Three are teachers of traditional art and traditional culture studies. (b) Seven art designers from game companies. Including 2D and 3D character and scene designers as well as UI designers. (c) 2 game planners from game companies. The designers and planners are selected from cities/provinces that are leading in the development of the Chinese gaming industry, such as: Shanghai, Beijing, Guangzhou Province, Zhejiang Province. Specific information for each expert is shown in Table 2. This study conducted two rounds of inquiries by sending questionnaires to the 17 experts via email to obtain detailed and rich opinions.

Table 2

Expert sample information2

Expert NO.	Professional	Positions	Years of Work	Region
1	2D animation design	Associate Professor	12	Henan Province, China
2	Game Concept Design	Doctor	6	Malaysia
3	3D animation design	Associate Professor	12	Shanxi Province, China
4	Animation Design	Doctor	7	Malaysia
5	Illustration Design	Doctor	8	Fujian Province, China
6	Chinese painting (Traditional Art)	Professor	18	Fujian Province, China
7	Calligraphy (Traditional art)	Associate Professor	11	Hunan Province, China
8	Research on Traditional Culture	Associate Professor	10	Fujian Province, China
9	Two-dimensional character design in the game	Designer	5	Guangdong Province, China
10	Game 2D character design	Designer	15	Guangdong Province, China
11	Game 2D scene design	Designer	8	Zhejiang Province, China
12	Game 2D scene design	Designer	10	Beijing, China
13	Game UI design	Designer	7	Shandong Province, China
14	Game 3D character design	Designer	11	Shanghai, China
15	Game 3D scene design	Designer	12	Shanghai, China
16	Game Planner	Designer	8	Shanghai, China
17	Game Planner	Designer	13	Beijing, China

The information statistics of the expert group are as shown in Table 3:

Table 3

Delphi Expert Groups3

Demographics	N=17	%
Groups		
Professionals	8	47.06%
Academics (PhD or Associate Professor)	9	52.94%
Years of work experience		
5-9	7	41.18%
≥10	10	58.82%
Gender		
Male	11	64.71%
female	6	35.29%

Criteria for Consensus

In the Delphi method, the criteria for reaching consensus are not uniform. There are two common cases (Foth et al., 2016) : (a) The first is to determine consensus based on the percentage of consensus of a specific standard. However, the range is very wide, from 50% to 97%. (b) The second type is the scoring of indicator based on the Likert scale. In this study, a five-point Likert scale was used. On a scale of 1 to 5, they are: very unimportant, unimportant, neutral, important, very important. When the importance of a certain indicator meets the average value > 3.50 , and the standard deviation < 1 and the coefficient of variation (CV) < 0.25 (He & Niu, 2025), it will be determined as an important indicator and retained. Otherwise, this indicator will be modified or deleted according to the expert opinions.

Indicator Adjustment and Optimization*The First round of expert opinions and indicator adjustments*

The first round of expert consultation was conducted from December 9 to 20, 2024. A total of 17 consultation questionnaires were distributed and 17 valid questionnaires were retrieved. The item settings of this questionnaire are related to the names of the indicator at all levels and the weights of the indicator. All the experts gave scores for the importance of indicators at all levels. Among them, eight experts made revision suggestions for the indicator at all levels. The results of the first round of expert consultation on the importance of indicator at all levels are shown in Table 4.

Table 4

Statistical Results (First Round)

Indicators	Minimum	Maximum	Average	Standard Deviation	CV
A Cultural Connotations	4	5	4.59	0.507	0.11
A1 Cultural Communication	3	5	4.53	0.624	0.14
A2 Cultural depth	3	5	4.12	0.857	0.21
A3 Cultural Limitations	2	5	4.06	0.827	0.20
B Objective and Accurate	4	5	4.53	0.514	0.11
B1 Objectivity	3	5	4.29	0.686	0.16
B2 Accuracy	3	5	4.47	0.717	0.16
B3 Detail Presentation	1	4	3.06	0.827	0.27
C Creative adaptation	3	5	4.12	0.781	0.19
C1 Innovative Ideas	3	5	4.41	0.618	0.14

C2 Logical and Reasonable	3	5	4.35	0.702	0.16
D Artistic Style	3	5	4.41	0.712	0.16
D1 Style fit	3	5	4.29	0.772	0.18
D2 Aesthetic Value	3	5	4.41	0.712	0.16
D3 Uniqueness	3	5	4.12	0.697	0.17
E User experience	3	5	4.12	0.6	0.15
E1 Recognizability	3	5	4	0.612	0.15
E2 Immersion	3	5	4.35	0.702	0.16
E3 Entertainment	3	5	4.18	0.883	0.21
E4 Cultural Dissemination	1	4	3	0.935	0.31

From the statistical results, it can be seen that the "B3 Detail Presentation" indicator and the "E4 Cultural Dissemination" indicator should be adjusted. Some experts have suggested that "B3 Detail Presentation" should fall under the category of "B2 Accuracy". This is because the accuracy of traditional visual elements is mainly reflected in the details. Therefore, "B3 Detail Presentation" has been removed. The average scores, standard deviations and CV of the remaining indicators all meet the requirements.

In addition, based on the specific opinions given by the experts, the following modifications are made: (a) Add the "A4 Content Matching" indicator. It means the content of traditional visual elements should match the game's world view and story background. Experts point out that attention should not only be paid to the fit in art design, but also to the fit in the content of the elements. (b) Add the "C3 Retention Features". Experts point out that for the innovation and adaptation of traditional visual elements, it is necessary to retain their most obvious and essential features. (c) Add the "D4 Technical implementation difficulty". Experts point out that many designs that simplify and adapt traditional visual elements are likely forced adjustments due to technical reasons and gameplay limitations. (d) Change "C1 innovative Ideas" to "C1 Innovation", and change "C2 Logical and Reasonable" to "C2 Rationality". Make the indicator names more concise and clear.

The Second round of Expert Opinions and Indicator Adjustments

Based on the results of the first round of research, after modifying the indicator, the questionnaire was redesigned again for the second round of research. In the questionnaire, the reasons for the modification of the indicator were explained. And let the experts score the importance of all the indicators again.

The second round of expert consultation was conducted from January 28 to February 14, 2025, with 17 questionnaires distributed and 17 valid questionnaires retrieved. All experts gave scores on the importance of indicator at all levels in the revised indicator system, and no experts put forward any new revision suggestions. The results of the second round of expert consultation on the importance of indicator at all levels are shown in Table 5. It can be seen that the importance of all indicator meets the conditions, indicating that experts have reached a consensus on the setting of the first-level indicator.

Table 5
Statistical Results (Second Round)

Indicators	Minimum	Maximum	Average	Standard Deviation	CV
A Cultural connotation	4	5	4.71	0.47	0.10
A1 Cultural Communication	3	5	4.35	0.862	0.20
A2 Cultural depth	3	5	4.12	0.857	0.21
A3 Cultural Limitations	2	5	3.82	0.809	0.21
A4 Content Matching	4	5	4.65	0.493	0.11
B Objective and accurate	4	5	4.59	0.507	0.11
B1 Objectivity	3	5	4.24	0.752	0.18
B2 Accuracy	3	5	4.47	0.717	0.16
C Creative adaptation	3	5	4.12	0.781	0.19
C1 Innovativeness	3	5	4.35	0.606	0.14
C2 Rationality	3	5	4.53	0.624	0.14
C3 Retain Features	2	5	4.12	0.857	0.21
D Artistic Style	3	5	4.35	0.702	0.16
D1 Style fit	3	5	4.29	0.772	0.18
D2 Aesthetic Value	3	5	4.47	0.717	0.16
D3 Uniqueness	3	5	3.88	0.6	0.15

D4	Technical Implementation Difficulty	2	5	3.65	0.702	0.19
E	User experience	3	5	4.18	0.636	0.15
E1	Recognizability	3	5	3.88	0.485	0.13
E2	Immersion	3	5	4.47	0.717	0.16
E3	Entertainment	3	5	4.41	0.712	0.16

Results

On this basis, the weight values of each indicator were calculated by the normalization method based on the average values of the indicator (see Table 6). The scores of each first-level indicator are relatively close. Therefore, when applying traditional visual elements in game art design, these five aspects all need to be taken into account.

In terms of secondary indicator: (a) Among the secondary indicator of "Cultural Connotation", the score of "Content Matching" is the highest. That is, when applying traditional visual elements, emphasis should be placed on the compatibility of the elements with the game's worldview and story background. (b) Among the secondary indicator of "Objective and Accurate", the score of "Accuracy" is higher. It is required that the design accurately reproduce the original characteristics of the visual elements. Including details such as shape, color, structure, etc. (c) Among the secondary indicator of "Creative Adaptation", the score of "Rationality" is the highest. That is, for the re-creation/adaptation of traditional visual elements, priority should be given to ensuring logical rationality. Rather than haphazardly piecing together, adding or subtracting, and modifying Hu elements. (d) Among the secondary indicator of "Artistic Style", "Aesthetic Value" has the highest score. That is, in the application of traditional visual elements, priority should be given to ensuring the aesthetic height of the art design. Make it aesthetically pleasing. (e) Among the secondary indicator of "User Experience", "Immersion" and "Entertainment" have the highest scores. That is, traditional visual elements in the game's visuals should create an immersive visual atmosphere. At the same time, it can provide players with more pleasure in viewing and exploring.

Table 6

Indicator System of Traditional Visual Elements Applied in Game Art Design

First-level indicator	Secondary indicator	indicator description
Cultural Connotation (21 points)	Cultural Communication (5 points)	The extent to which the cultural meanings and values carried by traditional visual elements are accurately conveyed and understood in the game.
	Cultural Depth (5 points)	Is the depth of the game's exploration and presentation of the cultural connotations contained in traditional visual elements merely superficial or can it deeply embody the core spirit of the culture?
	Cultural Limitations (5 points)	The application of traditional visual elements in the game is in line with real-world usage conditions and limitations.
	Content Matching (6 points)	The essence of traditional visual elements matches the game's worldview and story background.
	Objective and Accurate (21 points)	Objectivity (10 points)
Accuracy (11 points)		The degree to which the traditional visual elements applied in the game conform to the traditional cultural archetypes in terms of form, color, meaning, etc.
Creative Adaptation (19 points)	Innovation (6 points)	The traditional visual elements applied in the game, whether to add new creativity and ideas to infuse the traditional elements with new vitality and modernity.
	Rationality (7 points)	Newly added ideas/thoughts, whether they are reasonable and logically consistent.
	Retain Features (6 points)	Adaptations and innovations of traditional visual elements should retain their original most prominent features.
Artistic Style (20 points)	Style fit (5 points)	The degree to which traditional visual elements are in harmony with the overall artistic style of the game, including different style types such as realistic, cartoon, fantasy, etc.
	Aesthetic Value (6 points)	Whether the application of traditional visual elements has high aesthetic value and can bring visual enjoyment and aesthetic experience to players.
User experience (19 points)	Uniqueness (5 points)	The artistic style of the traditional visual elements applied, whether distinctive.
	Technical Implementation Difficulty (4 points)	Evaluate the difficulty of implementing traditional visual elements in the game from a technical perspective, and whether technical limitations have affected the presentation of the elements.
	Recognizability (5 points)	Players can easily recognize the difficulty level of traditional visual elements in the game, and clear recognition helps players better understand and feel traditional culture.
	Immersion (7 points)	Can the application of traditional visual elements enhance the immersion of the game, making players feel as if they were in a virtual world with traditional cultural characteristics?
	Entertainment (7 points)	Whether traditional visual elements add fun to the game, such as through ingenious design or interactive ways that allow players to experience the charm and pleasure of traditional culture during the game.

Conclusions and Discussions

This study, by applying the Delphi method and based on the opinions of experts, comprehensively sorted out and clarified the evaluation indicator system applicable to the application of traditional visual elements in game art design, that is, the conditions that should be met for the application of traditional visual elements. The established indicator system can not only be used in the process of new game research and development and design, but also be used to survey players to evaluate and modify the design cases. For game companies, evaluation by the indicator during the art design stage can help avoid the risks of cultural misuse and misinterpretation in advance. In addition, the indicator system can also re-evaluate classic game cases, thereby providing guidance and reference for future designs. For academic research, it can provide a quantitative tool for evaluating the effectiveness of games as a medium of cultural dissemination.

The Scientificity and Effectiveness of the Indicator System

The construction of the indicator system adopted the Delphi method and ultimately included 5 first-level indicator and 16 second-level indicator. The experts respectively provided suggestions and scores for the indicator through the communication method of questionnaires. The influence of authoritative experts was avoided (Okoli & Pawlowski, 2004). The Delphi method does not require the number of experts to be statistically representative, but rather focuses more on the quality of the expert panel (Hsu & Sandford, 2007). That is, it relies more on the experts' familiarity with the problem and their expertise. In this study, the selected experts are all engaged in the research topic, namely game/animation art design and traditional culture-related studies. They all have at least five years of working experience. There are 10 experts with more than 10 years of experience. and the panel is composed of professionals and academics, which can better balance the opinions of the experts (Cole et al., 2013).

Furthermore, regarding the issue of restoration and adaptation of those controversial traditional visual elements mentioned in the research introduction (Que et al., 2025; Liu, 2024), the indicator system of this study provides specific weights. It helps to balance "cultural accuracy" and "creative adaptation" in design practice. Overall, this study strictly followed the requirements of the Delphi method, and the indicator system was relatively reasonable and applicable.

Deficiencies and Suggestions for Future Research

The original intention of establishing the indicator system is to be applicable to the quality evaluation of the application of traditional visual elements in game art design. According to the *User-centered Design Theory*, the players' experience is incorporated into the design and production process of the product. Therefore, the evaluation indicator system is helpful for collecting players' opinions/attitudes during the game development process, thereby guiding/correcting the design.

As a new derivative evaluation system, it has certain limitations. The Delphi method, as a more qualitative research approach, has unavoidable limitations such as a smaller sample size and less objectivity. Future research can based on the following aspects: (a) Adopt questionnaire surveys to collect a large amount of data and further revise the indicator system and the distribution of weight values. (b) Expand the sources and diversity of the sample. For

example, for the "Technical Implementation Difficulty" indicator, the professional opinions of game programmers can be further introduced. (c) Incorporate objective evaluation methods in the research process. For instance, in the actual game art design work, the evaluation of the indicator system can be combined with other forms of evaluation (such as user satisfaction surveys, etc.). By combining subjective and objective evaluations, the quality of the design application of traditional visual elements can be reflected more comprehensively.

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