

Quantified 'Love' in Virtual Companionship: A Study of Overseas Media Coverage of Chinese Otome Games

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Abstract

Against the backdrop of the rapid growth in female-oriented digital entertainment demand, domestically developed otome games have emerged as significant vehicles for cross-cultural communication. Existing research has largely focused on player experience and narrative analysis, with insufficient attention paid to media construction. The study takes the successful Chinese otome game "Love and Deep space" as a case study and adopts Entman's (1993) framing theory to analyze how overseas Chinese-language media construct public perception of the game through four key mechanisms: problem definition, causal interpretation, moral evaluation, and remedy promotion (Entman, 1993). The research draws on reports about the game from the Wisers news database between February 2024 and January 2025 as the corpus. Using Latent Dirichlet Allocation topic modeling to identify optimal topic clusters (Blei et al., 2003). The findings show that the reports predominantly present four discourse frames: 1) Business competition and market quantification frame; 2) Cross-sector collaboration and player economy frame; 3) Emotional consumption and psychological compensation frame; 4) Cultural export and globalization frame. This study demonstrates how media construct meaning to reshape public understanding of emerging cultural products and provides both theoretical and practical insights for understanding the global dissemination

of Chinese domestic games.

Keywords

Cross-cultural communication, otome games, framing theory

1. Introduction

In recent years, games for female audiences - "otome games" have gradually entered the mainstream horizon and evolved into an important cultural and economic force. Otome game is a plot-oriented love simulation game specially designed for female players. Players play the protagonist in the game. The core of this kind of game is to build a "one-to-many" love relationship.

This kind of game was first created in Japan in the late 1990s, and then quickly became popular in neighboring countries such as South Korea and China, and even spread to some Western countries. Although the current research on this emerging field is still limited, the existing research on local Chinese girl games mainly focuses on the social and cultural perspective, exploring its role in the awakening of feminism, the establishment of female identity and the compensation of women's emotional needs. However, as an emerging category in the game market and has huge consumption potential, the girl game has a very high commercial research value and needs to be further explored in depth (Tang, 2024). This study will focus on the coverage and presentation of Chinese girl games in the construction of overseas media discourse, aiming to reveal the cultural and commercial narratives contained in its global dissemination process.

2. Literature review

Otome game originated in Japan. It is an interactive narrative game with female players as the audience and the theme of love as the core. In recent years, with the increasing number of female players, otome games have become rapidly popular around the world and have been localized in China, South Korea, Brazil and other countries. Now it has become an important medium for women to carry out digital entertainment and self-expression. The earliest otome game was Angelique, released by Koei Tecmo of Japan in 1994. The work was widely praised after it was listed in Japan, and gradually evolved into a unique subculture. However, it was not until 2017 that the girl game received wide attention in China for the first time - "Love and Producer" launched by Zettai Paper Company caused a huge sensation and attracted the participation of a large number of female players (Huan, 2022). In recent years, the company has launched the equally popular Love and Deep Space, which has once again brought the Otome game to the focus of public attention.

With the increasing popularity of the girl game, it has gradually attracted the attention of some scholars and began to be included in the research category from multiple perspectives. Among them,

most of the relevant studies are closely related to gender issues. Huan (2022) discussed three popular girl games in the Chinese market from 2017 to 2021, and pointed out that the gender characterization in girl games may have an impact on the attitude of female players in appearance cognition, emotional relationships, etc. (Huan, 2022). Wen et al. (2024) deeply explored the dilemma faced by the construction of women's images in the contemporary virtual world, and focused on analyzing the differences between female characters in maiden games and female characters in traditional games. The study found that the girl game has made breakthrough progress in "gender delabeling", which not only promotes the modern spread of feminist ideas in the virtual world, but also criticizes the existing gender politics, power structure and stereotypes (Wen et al., 2024).

In the field of literary research, Saito (2021) examined the evolution of "Otome Game" as a narrative medium and its value in literature and media research. The author pointed out that this kind of game not only draws on the traditional literary narrative strategy, but also poses a challenge to the inherent preset of modern narrative text by combining computer-generated text and audio-visual elements (Saito, 2021). Gao (2025) and others, on the other hand, from the perspective of sociology, explored the quasi-social interaction phenomenon of Chinese female players in otome games, revealing how otome games can meet the emotional needs of players through narrative design and character portrayal (Gao et al., 2025). Zhang (2024) adopts a hybrid method, combined with questionnaires and in-depth interviews, and explores the social and psychological characteristics of Chinese otome games players from the perspective of media attributes, thus enriching the understanding of the behavior of local players (Zhang, 2024).

Through systematic combing of existing literature, it can be found that there are still significant gaps and shortcomings in the current research on otome games. Most studies mainly focus on player experience or game design itself, and often analyze based on the theoretical framework in the field of gender and sociology; while the discussion at the media level is relatively scarce. As a key area that shapes public perception, media has great research value in this research field. Secondly, at the level of research methods, most of the existing research relies on small-scale qualitative analysis; although such methods can provide in-depth insights, it is difficult to capture macroscopic discourse patterns and their time-dependent evolution trends. It is particularly worth noting that the current research lacks the use of the computational social science paradigm to explore large-scale media texts, which limits the breadth and universality of research to a certain extent. Therefore, this study aims to fill this gap by conducting

a text mining analysis of media coverage through the lens of computational communication.

3. Theoretical Framework

Framework theory is an important method in qualitative research. In the 1950s, anthropologist Gregory Bateson, inspired by Gestalt psychology, first proposed the concept of "psychological framework" and regarded it as an important means for individuals to understand the meaning of things (Zhao & Gao, 2025). Subsequently, the famous sociologist Erving Goffman introduced it into the field of sociology. Its core idea is that every scene in social life needs to be interpreted through a certain "framework" (Goffman, 1974). Eviatar Zerubavel, citing Goffman's book *On Multiple Realities*, pointed out that Goffman believes that "reality" is composed of many different areas of experience or meaning. (Zerubavel, 2024); and the word "framework" refers to the intermediary mechanism of centered adjustment between the subject and the environment. Only by relying on the framework can the outside world recognize and give value to the subject, and the actor can also enter the practical field of daily life. This concept can be defined as both a dynamic action process and a static product of interpretation. From the perspective of the action process, framework theory can infer a set of analytical models called "frameworkization", which focuses on examining how information communicators apply specific interpretation methods and structural order to the social world. As an interpretation paradigm, framework theory can be regarded as a benchmark tool for interpreting and screening facts and texts. Therefore, the framework theory can not only be used to explore the cognitive structure behind specific facts, but also to apply to academic research on the construction process of social meaning (Zhao & Gao, 2025).

The main framework used to analyze the general thematic units in events can be divided into two categories: the natural framework and the social framework. The natural framework focuses on events that are not dominated by human factors (such as weather forecasts or natural disasters), whose interpretation is based on the causal relationship at the physical level; the social framework points to those events designed, guided and controlled by social behavior and their related discourses, and emphasizes the intention and interaction effects. With the help of the above frameworks, we can identify and analyze the "guided sexual behavior" contained in the event. Framework analysis helps to understand the relationship between social events and different groups (Mohamed, 2019); however, the method of framework analysis also has some shortcomings, and its inherent vulnerability makes the same event possible to produce multiple interpretations (Goffman, 2010). Goffman's framework theory mainly

focuses on personal experience and lacks corresponding empirical support. With the continuous expansion of the research field, scholars have begun to diversify the application of framework theory.

In the field of communication, many scholars have also used the "framework theory" to carry out research. Scholars Mateu (2019) and others believe that among the many definitions of framework theory, the most respected is the definition proposed by Robert Entman (Mateu & Domínguez, 2019). He pointed out that the concept of "framing" aims to examine the discrete concepts identified by the subject; therefore, the concept of framing provides an expression for descriptive communication text, and the analysis of the framework clarifies the specific mechanism of information dissemination (or communication) affecting human consciousness. The so-called "framework" refers to selecting a specific aspect from the perception of reality to make it more prominent in the communication text, so as to help define specific issues, provide causal explanations, conduct moral evaluations and propose solutions to related projects (Entman, 1993).

This definition not only expands the scope of application of framework theory, but also makes it an important analytical tool in the field of mass media research. Compared with other theories such as "agenda setting", if the framework theory is selected as the theoretical framework for analyzing news texts, we can have a deeper understanding of how various forces and groups in society shape the public's discourse on specific issues by establishing a certain "dominant label".

In view of this, this article will use the framework theory defined by Robert Entman as an analytical framework, aiming to reveal the framework construction of different topics in news reporting and the logic of discourse power behind them, so as to have a more comprehensive understanding of how the media conducts the public issue of "Otome Game".

4. Research Design

This study adopts a mixed research method that combines quantitative and qualitative approaches. The design aims to integrate the macro-generalization ability of computational linguistic methods with the subjective interpretation ability of qualitative analysis, so as to comprehensively reveal the discourse construction mode of female game media reports. Specifically, after collecting media texts and building a corpus, this study modeled the LDA topic of these media texts; then, the obtained topics were interpreted in combination with the framework theory and LDAAvis software to explain the construction elements behind these discourse clusters. This step-by-step exploration strategy not only ensures that the

research findings come from the data itself and avoids preconceived subjective bias, but also enhances the robustness and interpretability of the research conclusions.

4.1 Methodology

Natural language processing (NLP) enables computers to extract meanings from human language in text documents. The theme modeling method contains powerful intelligent technology and is widely used in the field of natural language processing (Jelodar et al., 2018). LDA (Dirichlet Distribution) is a thematic model. As a classic unsupervised machine learning algorithm, it is used to construct a generation probability model of discrete data (such as text corpus). LDA was originally developed by David M. Blei et al. proposed in 2003 (Blei et al., 2003); since then, it has gradually become a core algorithm in the field of subject modeling.

Currently, the development of LDA theme modeling has demonstrated a wide range of applicability and a solid theoretical foundation. In terms of the breadth of application, LDA has gone beyond the simple role of a text analysis tool and evolved into a general method for understanding social phenomena; it has been widely used in social sciences (Baranowski, 2022; Shah & Sebastian, 2020) and psychology (Hagg et al., 2022) and other fields, demonstrating its powerful ability to extract human-understandable semantics from massive unstructured data. This fully demonstrates its remarkable value in interdisciplinary applications. Therefore, the research selects this method as the analytical approach, which is fully reliable.

4.2 Research Subjects

This study selects "Love and Deep Space" launched by Paper Network Company in early 2024 as the core research object. This choice is mainly based on the excellent representation of the work in the three dimensions of technology, market and culture. These factors make it a key case to examine the process of building women's discourse on game media.

From a technical perspective, "Love and Deep Space" is the first female-oriented game in China that successfully integrates high-fidelity 3D realistic modeling, action combat system and love simulation gameplay. This technological innovation not only marks the "condemned" shift of women's games from 2D flat narrative to 3D immersive experience (Zhu, 2025), but also makes it significantly different from traditional female-oriented games in terms of visual presentation and interaction mode. This iterative update of technology has prompted the media to widely introduce technical discourses such as "technical power", "immersion" and "next generation" while carrying out traditional discussions around plots and

characters, thus providing rich text materials for analyzing how the media build technology-driven cultural products.

From the perspective of market performance, "Love and Deep Space" is a work that has achieved phenomenal commercial success. According to the data of Sensor Tower, as of June 8, 2025, the cumulative global revenue of Love and Deep Space has reached \$650 million, and its overseas revenue has continued to rise. In May, the performance of the game in overseas markets surpassed that of the Chinese iOS market, accounting for 52% of the global iOS bestseller list. Its global users quickly exceeded the 50 million mark, and topped the best-selling list in many countries around the world for many times, showing great market influence (Zhong, 2025). This excellent market performance has made it surpass similar competitors in the early days and has become a leading work in the field of female-oriented games, thus attracting wide and diversified media attention. This extensive media coverage and concentrated media discussion have laid the necessary data foundation for large-scale and systematic media text mining and discourse analysis.

From the perspective of society and culture, "Love and Deep Space" itself is a cultural phenomenon full of tension. On the one hand, the high immersion brought by its 3D technology greatly meets the needs of female players in terms of aesthetics, emotional companionship and self-realization (Shuangkun Fu, 2025); on the other hand, the overly realistic character image has also triggered the "terror valley effect" and emotional body Discussion on "McDonaldization" (Zhu, 2025). At the same time, its marketing strategy and the complex ecological environment within the player community have aroused extensive and diverse controversy in the public domain. This inherent complexity makes relevant media reports inevitably contain rich and mutually game discourse strategies, thus providing an ideal research field for critical discourse analysis.

In summary, "Love and DeepSpace" combines technological innovation, market benchmark effect and cultural controversy. In view of its wide popularity, selecting it as a research object helps to obtain relevant media coverage more efficiently and conveniently.

4.3 Research Subjects

The sample of this study is taken from the Wisenews Database. Founded in 1998, the Wisenews Database is a leader in the field of massive and authoritative news reporting integration in Greater China. The database contains comprehensive Chinese news articles, with more than 96 million new articles added every day, which come from about 1,600 print media and 50,000 online media. Therefore, it is

highly reliable to choose this database as the sample source. We selected Chinese news reports related to the game "Love and Deep Space" from February 8, 2024 to January 18, 2025 (About one year) as a research sample.

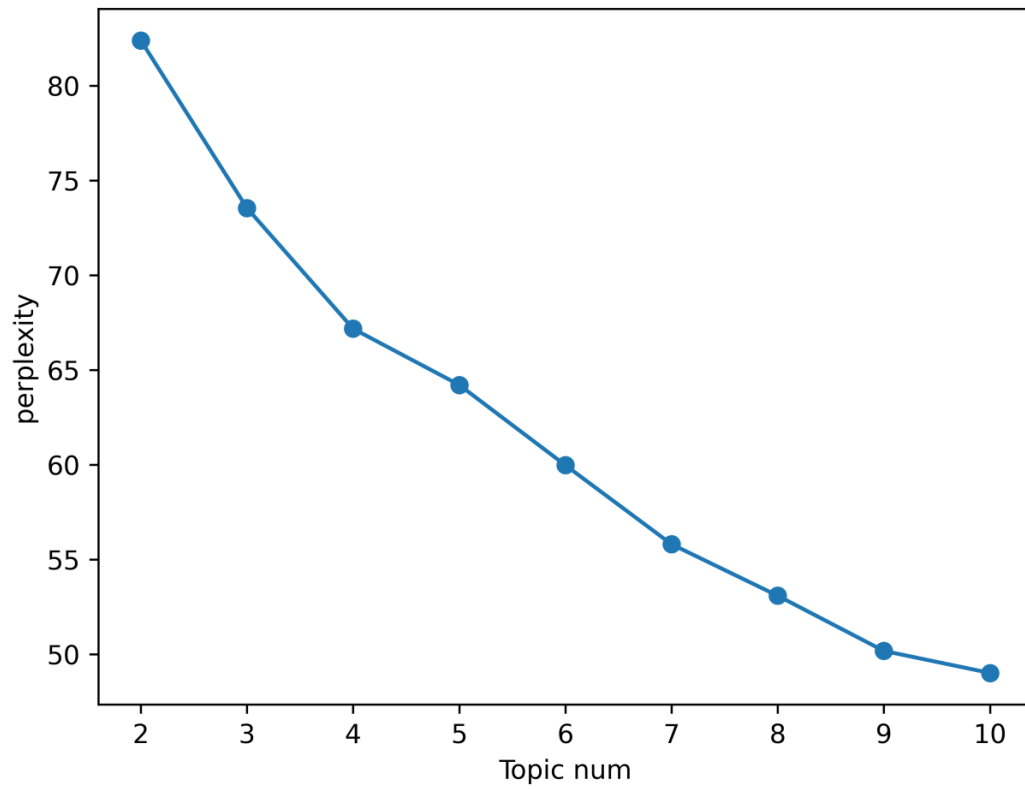
4.4 Data Processing

Before the data is officially processed, we will carry out pre-processing work. The specific processing process includes: first, delete repetitive text, non-Chinese characters and meaningless symbols; then, use word segmentation tools to divide consecutive sentences into independent words; and finally, remove some frequently appearing words that appear frequently but have no practical meaning in combination with the disabled word list and specific research context. After this series of steps, we will obtain a purer corpus, so as to provide an accurate data basis for subsequent model construction. Data preprocessing aims to prepare for improving data accuracy, which can ensure that the final research results have substantial characterization significance to the original data (Hagg et al., 2022).

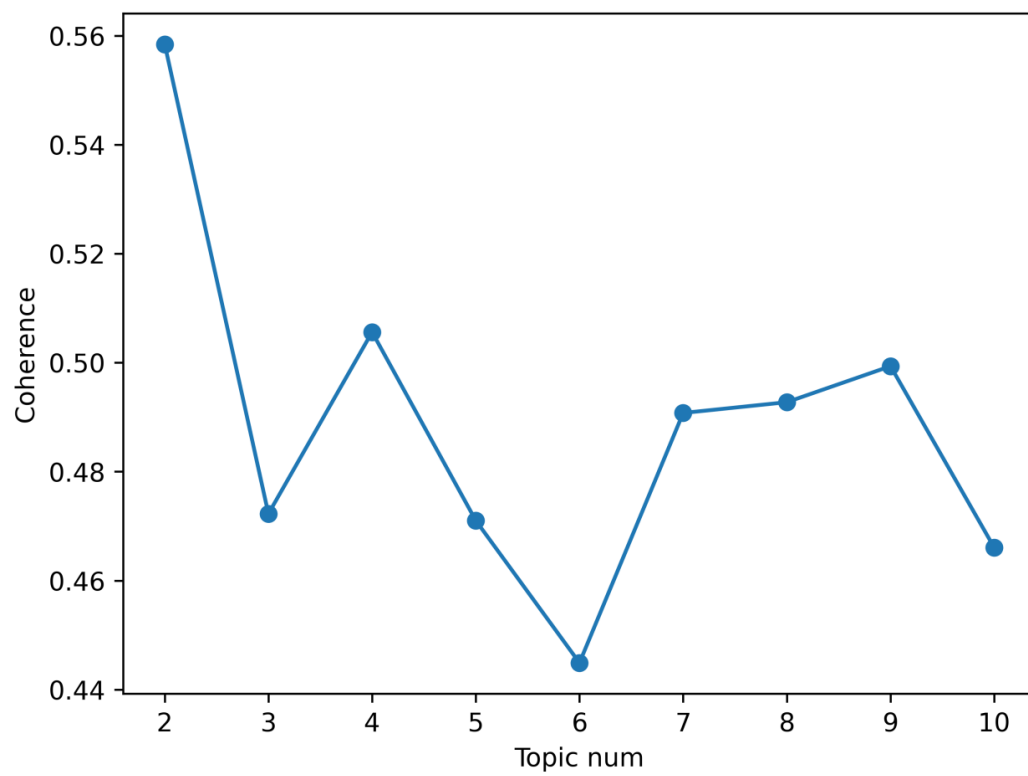
After completing the data preprocessing, this study will use the LDA algorithm for thematic modeling. At the specific implementation level, this study uses the Python programming language and calls the Gensim library to build the model (Řehůřek & Sojka, 2010). Gensim is one of the mainstream tools for thematic modeling in the field of natural language processing, which can efficiently process unstructured text data and construct corresponding semantic spaces.

The LDA model is based on the three-layer architecture of "document-topic-word". The model assumes that each document is mixed with several topics in a specific proportion, and each topic itself is composed of a series of words that follow a specific probability distribution. The algorithm ignores the grammatical structure of the text in the processing process, and only deduces the implicit theme framework contained in it only by analyzing the symbidenece pattern of words in large-scale text data (Liu et al., 2020).

In order to determine the optimal number of topics, we usually use two core indicators for evaluation: one is Perplexity, which reflects the model's ability to predict data; the smaller the value, the more accurate the fit of the model. The second is Topic Conherence, which mainly examines the connection of words under the same theme at the semantic level; the higher the score, the easier it is to understand and interpret the extracted theme (Röder et al., 2015).



(Figure 1: LDA perplexity)



(Figure 2: LDA Coherence)

From the perspective of the Perplexity indicator, as the number of topics increased from 2 to 10, the degree of confusion showed a continuous downward trend. We noticed that when the number of topics was set to 4, the degree of confusion decreased significantly and significantly compared with the initial point, indicating that the model was able to effectively capture the characteristics of the text data at this time and avoid the risk of fitting. Judging from the thematic Coherence index, there is a very obvious local peak when the number of topics is 4. This strongly proves that when the text is divided into 4 topics, the vocabulary within each theme is the highest, the semantic logic is the clearest, and it is most conducive to human understanding and interpretation. Therefore, considering the fit excellence of the model and the interpretability of the results, it is undoubtedly the best choice to select 4 as the number of the best topic.

5. Research findings

We used LDAvis software to visualize the theme and built four themes, each of which is represented by a set of commonly used keywords. Figure 3 shows the interactive visual output of the theme model. In this figure, each circle corresponds to a theme, and the size of the circle reflects the proportion of the theme in the whole document set. The layout of the circle on the two-dimensional plane shows the similarity between the themes (the similarity is calculated using the MDS multi-dimensional scaling algorithm). By adjusting the λ parameters, users can view more representative keywords in each topic. In addition, we have also generated word cloud diagrams for different topics to assist in analysis.

competition framework, Make Love and Deepspace a successful commercial hit. This not only highlights the game and its publisher as benchmarks within the industry but also positions otome games within narratives of capital logic and market competition.



(Figure 5: Frame 2)

Cross-sector collaboration and player economy frame. Media reports frequently emphasize IP collaborations, framing this type of female-oriented game as a social activity that bridges virtual and real worlds. The discourse constructs a consumption landscape often grounded in emotional resonance and a sense of community belonging.



Cultural export and globalization frame. Media describe the game's journey to global markets as a powerful display of China's cultural soft power. They also discuss it together with companies like MiHoYo, building a narrative of national pride and technological confidence. Within this framework, the media not only praise the achievements of cultural exports but also keenly notice and highlight the issues that arise, such as cultural adaptation, localization ethics, and ideological boundaries.

6. Research conclusion

6.1 Discussion

This research uses the framework theory and its related factors to analyze and discuss. In the media's report on Love and Deep Space, the media built the public's understanding of this cultural phenomenon through four dominant frameworks.

Business competition and market quantification frame, the media defines the otome games industry as a competitive industry dominated by data and ranking. Its core problem is how to maintain this business success. The causal explanation of this problem is usually attributed to accurate version updates, character card pools, and global distribution strategies, and it is believed that the cooperation between

third-party data platforms and the media creates a consumption environment for the player economy. Under this framework, moral evaluation presents profound contradictions: on the one hand, it praises the economic benefits and cultural influence brought about by the overseas expansion of games and regards it as the achievement of industrial and cultural soft power; on the other hand, it also vaguely criticizes the "data-oriented theory" and the "gold rush" mechanism, believing that it may be Exploitation of players' emotional and property health. Therefore, this naturally leads to action recommendations, that is, the industry should explore a healthier profit model to reduce dependence on the lottery mechanism, and regulators should consider improving consumption-related protection measures to achieve a balance between business interests and social responsibility.

Cross-sector collaboration and player economy frame focuses on the core issue of how intellectual property cooperation can maintain the emotional identity and cultural value of players in the context of excessive commercialization. Its causal explanation points out that brands create uniqueness and scarcity through offline activities, and use the amplification effect of social media to launch a consumption cycle based on emotional resonance and sense of belonging. The moral evaluation under this framework is also dual: it not only affirms the positive role of cooperative activities in promoting cultural communication and community cohesion, but also criticizes the possible exploitation of cultural symbols by consumerism, simplifying the sincere emotions of players into simple marketing tools. Based on this, feasible action suggestions include: brands should pay more attention to cultural fit and content depth, promote the transformation to sustainable models such as "digital collaboration", and encourage users to participate in creation to maintain the authenticity of cultural expression and the long-term vitality of the community ecosystem.

Emotional consumption and psychological compensation frame defines the otome games as a compensatory solution for modern women to cope with the lack of real emotions. The core problem is whether virtual intimate relationships can healthily compensate for psychological needs and potential dependence risks. As for the root cause of its attraction, the media describes it as providing emotional support through immersive plots and realistic interactions, and points out that its deep motivation stems from interpersonal alienation and emotional depression prevalent in contemporary society. Under this framework, moral evaluation is full of tension: on the one hand, it affirms the value of games as a space for women's emotional catharsis and self-identification; on the other hand, the report also warns of the ethical dilemmas that "emotional addiction" may bring, such as weakening real social skills and even

strengthening gender stereotypes. The corresponding action suggestions call for the integration of the mental health guidance mechanism into the game content, encourage developers to design plots that promote offline social interaction, and advocate public discussions on digital emotional health to cultivate players' self-awareness and reflection on virtual relationships.

Cultural export and globalization frame defines the "globalization" of the game as the practice and challenge of Chinese cultural soft power on the global stage. Its core problem is how to deal with cultural differences, localization adaptation, and ideological conflicts in the process of internationalization. For the analysis of the causes of game success and setbacks, the report usually emphasizes the synergy of technical strength, intellectual property influence, and global distribution channels. At the same time, it points out that cultural differences, content sensitivity, and geopolitical factors are the main reasons for disputes and conflicts in overseas markets. Under this framework, moral evaluation integrates national self-confidence and critical reflection: it not only praises the achievements of the game as a cultural ambassador, but also enhances national self-confidence; in addition, it is necessary to be wary that it may inadvertently fall into the niche of cultural hegemonic narrative.

6.2 Research Contributions

This study reveals the complex cultural and commercial narratives of Chinese otome games in global communication. It fills a gap in research on the media discourse construction of otome games and provides a new perspective for understanding the discursive power logic of Chinese cultural products going abroad.

6.2 Research limitations

The research limitations in the sample source, this study focuses only on overseas Chinese-language media and does not capture the differentiated coverage in other languages. Additionally, as an unsupervised learning method, the LDA model has limitations in detecting subtle contextual nuances. Future research could expand the corpus, multi-modal analysis and so on, and compare domestic and international media coverage of otome games to more comprehensively unpack the global cultural influence of female-oriented games.

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