

Article

User Experience, Narrative Continuity, and Monetization in Interactive Full-Motion Video Games: Evidence from Steam User Reviews

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Abstract

Although monetization has been widely discussed in digital games, less attention has been paid to how it is discussed in narrative-centered Interactive Full-Motion Video (FMV) Games, where user experience depends heavily on continuity, completeness, and emotional engagement. Addressing this gap, this study analyzes 8676 Steam user reviews of *Road to Empress I* using NLP-based preprocessing, semantic analysis, sentiment analysis, and LDA topic modeling. The results indicate that the review corpus was organized around several interconnected dimensions, including narrative progression, character engagement, audiovisual performance, interactivity, and payment structure, with narrative-related concerns occupying a central position. Compared with the full corpus, the identified monetization-related review subset showed a less positive sentiment distribution, suggesting that monetization-related discussion within this subset was associated with more negative evaluations. Topic modeling further indicated three prominent concerns: interrupted narrative continuity, perceived incompleteness, and dissatisfaction with value for money. Overall, the findings suggest that, within the identified subset, monetization was discussed not merely as a pricing issue, but as part of the broader experiential structure through which continuity, completeness, and value were judged. The study contributes to research on Interactive FMV Games by foregrounding monetization as an experiential dimension and offers practical implications for designing less disruptive monetization strategies in narrative-centered interactive products.

Keywords: interactive FMV games; user experience; narrative flow; monetization design; Steam user reviews



Academic Editor: Stefanos Balaskas

Received: 28 May 2026

Revised: 6 July 2026

Accepted: 8 July 2026

Published: 13 July 2026

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1. Introduction

Against the backdrop of the deep integration of the digital economy and cultural and creative industries, the digital distribution and supply chain models of the video game industry are undergoing profound global restructuring [1]. This transformation has raised new questions about how digital cultural products can achieve sustainable development while maintaining a high-quality user experience. As a transmedia product that combines cinematic narratives with gamified interactions, Interactive Digital Narrative (IDN) has gradually developed a distinctive vocabulary and experiential logic that transcend the boundaries of traditional linear media [2]. Murray highlighted the significant potential of

this medium by emphasizing user ‘Agency’, defined as the player’s perceived capacity to make meaningful choices that influence how the narrative unfolds [3].

By returning the power of choice to users, Interactive FMV Games satisfy the psychological need for autonomy emphasized in Self-Determination Theory [4], thereby creating a strong sense of engagement that closely binds users to the unfolding story [5].

A core appeal of this genre lies in its capacity to produce immersion. Narrative Transportation theory provides an important perspective for understanding this process. It suggests that when users become deeply absorbed in a story, they temporarily detach from the real world and enter a highly immersive psychological state [6,7]. Ryan further argues that the interactivity of contemporary electronic media is reshaping this narrative illusion at a level comparable to virtual reality [8]. In Interactive FMV Games, this immersive quality is not produced by narrative content alone, but also depends on the continuity of interaction and the smooth progression of experience. From this perspective, monetization design is not merely an external revenue mechanism. When payment is embedded into narrative progression, it may also become an important experiential touchpoint within the overall user journey.

In the broader game industry, monetization commonly takes forms such as one-time purchase, downloadable content (DLC), episodic release, subscription, and in-game purchases. These approaches create different commercial opportunities for developers, but they also shape how players perceive access, progression, and value. In narrative-centered Interactive FMV Games, monetization becomes particularly sensitive when continued access to story content is tied to payment at key narrative moments.

In practice, interactive FMV games face a notable monetization dilemma. The high production costs associated with cinematic-level content have led some developers to adopt episodic or segmented release strategies for story content. Under this approach, payment requirements may appear at critical narrative nodes, requiring users to make purchase decisions before continuing the story. For players who seek narrative continuity and emotional immersion, such payment arrangements may be perceived as interruptions to the experience. As a result, monetization design may become associated with dissatisfaction, negative word-of-mouth, and reduced perceived value among some users.

This tension reflects a broader contradiction between the logic of monetization and the logic of immersive narrative experience. According to the GameFlow model, players tend to remain engaged when challenge, feedback, concentration, and continuity are maintained throughout the gameplay process [9]. When this rhythm is disrupted by an external intervention, the flow of experience may weaken. In interactive FMV games, a payment touchpoint inserted at a critical moment of narrative progression may prompt users to shift abruptly from emotionally engaged participants to rational consumers evaluating price and purchase necessity. Such a shift may be discussed by users in relation to immersion, narrative continuity, and value perception, especially when the timing or pricing of monetization is regarded as inappropriate.

Road to Empress I provides a representative case for examining this issue. It is a narrative-centered Interactive FMV Game set in a Chinese historical court context, in which players advance the story by making dialogue choices and selecting branching actions that influence character relationships and plot development. As a commercially visible title on Steam, it had generated 8676 user reviews at the time of data collection, indicating substantial player attention and discussion. The game has attracted interest for its cinematic production, audiovisual presentation, and historical atmosphere, while also generating sustained controversy over its monetization design. User feedback suggests that negative reactions are often associated not simply with paying itself, but with payment interruptions that fragment narrative continuity, weaken immersion, and generate a mismatch

between content and pricing. This makes *Road to Empress I* a useful empirical context for exploring how monetization design affects user experience and narrative flow in interactive entertainment products.

Existing research on Interactive FMV Games has mainly focused on media convergence, narrative form, and artistic aesthetics. Comparatively less attention has been paid to the user experience consequences of monetization design, especially from the perspective of large-scale user-generated data. Although Narrative Transportation and GameFlow offer useful theoretical foundations, empirical research has not yet sufficiently examined how monetization intervention disrupts narrative continuity, triggers emotional decline, and ultimately translates into negative reputation through changes in perceived value. From the perspective of sustainable development, this problem extends beyond short-term pricing strategy. It is also closely related to user trust, perceived fairness, and the long-term viability of content-driven digital products.

To address this gap, this study adopts a data-driven text-mining approach based on Steam user reviews of *Road to Empress I*. Specifically, the study first uses NLP-based preprocessing and descriptive text analysis to identify the main dimensions discussed in the full review corpus. It then applies sentiment analysis to compare the overall corpus with an identified monetization-related review subset. Finally, LDA topic modeling is employed on this identified subset to examine the main issues raised in these reviews and the sentiment tendencies associated with them. Accordingly, the study proceeds in three steps: it first identifies the overall structure of player evaluations, then compares sentiment patterns between the full corpus and the identified monetization-related review subset, and finally examines the major topics through which reviews in that subset articulate expectations regarding continuity, completeness, and value. Based on this design, the study addresses the following research questions:

RQ1: What are the main dimensions of player discussion and evaluation in the Steam user reviews of *Road to Empress I*, and how are narrative-related concerns positioned within them?

RQ2: What sentiment patterns characterize the full review corpus and the identified monetization-related review subset, and how do these two sets differ in emotional tendency?

RQ3: What major topics can be identified within the identified monetization-related review subset, and what do these topics suggest about implicit expectations regarding narrative completeness, continuity, and value in Interactive FMV Games?

This study makes three main contributions. First, it enriches research on Interactive FMV Games by foregrounding monetization as an important dimension of player evaluation and experience rather than treating it solely as a pricing issue. Second, it provides empirical evidence from large-scale Steam review data on how monetization is discussed within an identified review subset in relation to narrative continuity, perceived value, and the implicit expectations attached to narrative-centered game experiences. Third, it offers user-informed practical implications for designing less disruptive monetization strategies by highlighting the importance of preserving narrative continuity, perceived completeness, and expectation-consistent value delivery.

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature. Section 3 introduces the methodology. Section 4 presents the results. Section 5 discusses the findings and the implications for monetization optimization. Section 6 concludes the paper.

2. Literature Review

2.1. Media Characteristics and Immersive Experience of Interactive Cinematic Games

Interactive cinematic games can be understood as a form of IDN that combines audiovisual storytelling with user participation [2]. Unlike conventional linear film and television, this medium enables users to intervene in narrative progression through interactive choices, thereby transforming audiences from passive viewers into active participants in the story world. In this context, game-related design elements help organize participation and shape the overall experiential process. Deterding et al. defined gamification as the use of game design elements in non-game contexts, highlighting how mechanisms such as choice, feedback, and reward can structure experience [10]. In interactive cinematic games, these elements are embedded within narrative progression, making participation central to story development.

A key concept for understanding this medium is agency. Murray argued that one of the defining affordances of digital narrative lies in allowing users to take meaningful action within a story world [3]. By enabling users to influence plot development through branching decisions, Interactive FMV Games strengthen the sense of participation and autonomy in narrative consumption. This mechanism is also consistent with Self-Determination Theory, which emphasizes autonomy and competence as core psychological needs in motivated behavior [4]. When these needs are fulfilled, users are more likely to develop sustained engagement with interactive experiences [5].

The quality of such engagement depends heavily on immersion. Narrative Transportation Theory explains how users become mentally absorbed in a story and temporarily detach from the real world [6]. In digital interactive media, Ryan further argued that interactivity can deepen this illusion by increasing users' sense of presence and participation [8]. Related scholarship suggests that immersion is supported by attentional focus, emotional engagement, and narrative understanding [11], and may develop from initial involvement into deeper incorporation within the virtual environment [12]. Taken together, these perspectives indicate that immersion in interactive narrative arises not only from story content itself, but also from the continuity of cognitive and emotional involvement across the experience.

Research on game experience further indicates that immersion is sustained through structural continuity. The GameFlow model proposes that player enjoyment depends on factors such as concentration, control, challenge, and feedback [9]. Although Interactive FMV Games differ from challenge-oriented or system-heavy games, the model remains useful in showing that enjoyable gameplay relies on continuity in user attention and perceived control. Empirical research on narrative games likewise indicates that player–character relationships are associated with game satisfaction [13], while Toh argued that narrative games should be evaluated not only in terms of narrative content, but also through the interactional patterns by which players explore, project, play, and watch the story [14].

Taken together, these studies suggest that Interactive FMV Games are narrative-centered interactive media whose experiential value depends on agency, immersion, and continuity. This point is particularly relevant to the present study, because when monetization is embedded in content access and progression, it may be experienced not merely as a payment issue, but as a disruption to narrative continuity and immersion.

2.2. Game Online Review Mining and LDA Topic Modeling

With the expansion of digital distribution platforms such as Steam, user-generated reviews have become an important source for understanding user experience and product evaluation [15,16]. Compared with traditional surveys or interviews, online reviews provide large-scale and naturally occurring expressions of user attitudes, dissatisfaction, and

perceived value. Abdul-Rahman et al. further showed that sentiment analysis of Steam user reviews can generate analytically and commercially valuable insights, supporting not only the understanding of user satisfaction but also business-relevant modeling such as churn forecasting [15]. Focusing specifically on Steam, Lin et al. found that negative reviews often contain more concrete information about design defects and sources of dissatisfaction than positive reviews [16]. Research on Early Access games further suggests that perceived incompleteness and unmet expectations can significantly increase negative evaluations [17]. These findings indicate that online review data are particularly useful for examining user reactions to design arrangements that affect progression, content access, and value perception.

To identify patterns in large volumes of unstructured review texts, topic modeling has become a widely adopted analytical approach. Among existing methods, the LDA model proposed by Blei et al. remains one of the most influential unsupervised techniques for identifying latent thematic structures in text corpora [18]. Subsequent game-review research has shown that LDA can effectively capture major topics in large-scale review corpora and reveal systematic differences between positive and negative player evaluations [19]. In addition, automated text analysis has demonstrated clear value in classifying and summarizing user feedback. Yoon et al. showed that text-mining approaches can identify major dimensions of user experience and genre-specific concerns in game platform reviews [20], while Calefato et al. demonstrated that sentiment detection methods can improve the interpretation of short and noisy user-generated texts [21].

Recent studies have extended these techniques to multiple game-related contexts. Sentiment and thematic analysis have been applied to smartphone games [22], esports game reviews [23], and other review corpora in ways that reveal both the product attributes users discuss and the emotional polarity attached to them [24]. More broadly, recent research in sentiment analysis has emphasized that robust large-scale text analysis depends on appropriate choices of datasets, algorithms, and language-sensitive modeling strategies [25].

Accordingly, online reviews provide a valuable source for examining how players spontaneously articulate dissatisfaction, expectations, and value judgments. For the present study, LDA topic modeling and sentiment-oriented review analysis offer an appropriate framework for identifying how monetization-related concerns emerge in Steam user reviews and how these concerns are connected to narrative experience in Interactive FMV Games.

2.3. Game Monetization Design and Perceived Value

Research on game monetization suggests that player responses to commercial mechanisms are shaped not only by price, but also by perceived value, fairness, and the broader experience of play. Yee's motivation framework highlights the roles of achievement, immersion, and social factors in shaping player behavior [26]. Related research further shows that intentions to purchase virtual goods are influenced by functional, emotional, and social values, with satisfaction playing an important mediating role [27]. Other studies likewise indicate that joy, game experience, and immersion significantly shape players' willingness to make in-game purchases, suggesting that monetization is more likely to be accepted when it is integrated into enjoyable play rather than experienced as an interruption [28]. From the perspective of perceived value, purchase intention has also been shown to depend on users' evaluation of the trade-off between perceived benefits and perceived sacrifices [29].

These issues are especially salient in Interactive FMV Games, where monetization may be embedded directly into narrative progression. In such cases, user reactions to payment are shaped not only by price level, but also by when payment is required, how it

affects narrative continuity, and whether it is perceived as fair in relation to the amount and quality of content provided. When monetization intervention conflicts with experiential expectations, users may re-evaluate the value of continued participation. Prospect Theory offers an important explanation for this process by showing that individuals are especially sensitive to perceived losses [30]. If users feel that expected narrative content has been withheld or fragmented, payment may be interpreted less as an optional purchase and more as a loss-recovery demand. Cognitive Dissonance Theory also helps explain the tension that may arise when users who have already paid for a product encounter additional payment requirements before reaching a complete ending or core narrative closure [31].

In recent years, scholars have increasingly criticized disruptive and exploitative monetization practices in games. Zagal et al. were among the first to identify “Dark Patterns” in game design, highlighting how commercial systems may manipulate user behavior in ways that undermine autonomy and informed choice [32]. Subsequent studies have shown that aggressive monetization systems may contribute to negative user perceptions and problematic engagement patterns [33,34]. From a consumer protection perspective, King et al. examined exploitative monetized game services and the business logic behind user extraction [35]. Petrovskaya and Zendle later categorized unfair, misleading, and aggressive commercial techniques under the broader concept of “Predatory Monetization” [36]. At a wider ethical and regulatory level, McCaffrey discussed the governance challenges raised by highly aggressive microtransaction systems [37], while Neely examined the tension between content-driven design and monetization-driven design in contemporary games [38].

In narrative-centered games, therefore, monetization may be evaluated not only in economic terms, but also in relation to continuity, completeness, and experiential fairness. This provides the theoretical basis for examining why players may respond negatively when payment requirements are closely tied to story progression and access to subsequent content in Interactive FMV Games.

2.4. Summary of Existing Research and Research Gap

Existing research provides important theoretical and methodological foundations for this study. Research on Interactive Digital Narrative, narrative transportation, and game experience explains how immersion is generated and maintained in interactive cinematic games, and why this state is vulnerable to disruption [2–14]. Studies on online review mining, topic modeling, and sentiment analysis provide effective tools for extracting structured insights from large-scale user-generated texts [15–25]. Research on monetization design and perceived value, meanwhile, offers a useful framework for explaining how users respond when commercial arrangements conflict with experiential expectations [26–40].

At the same time, several important gaps remain. First, existing studies on Interactive FMV Games have focused primarily on media form, narrative design, and interactivity, while paying much less attention to how monetization structures affect user experience in this specific type of narrative-centered product. Second, although prior literature has examined online game monetization from the perspectives of purchase intention, exploitative design, and ethical concern, fewer studies have explored how monetization is perceived when it is tied directly to narrative progression and content access. In such cases, player dissatisfaction may not stem from payment alone, but from the way monetization reshapes the experience of continuity, completeness, and value. Third, although Steam user reviews have increasingly been used in game research, there remains limited empirical work that combines corpus-level review analysis with a focused examination of monetization-related discourse in order to explain why monetization becomes a salient source of negative evaluation in Interactive FMV Games.

This gap is especially important in chapter-based monetization contexts. When access to subsequent content is restricted at critical points in story development, monetization may be perceived not merely as a pricing mechanism, but as a disruption to continuity, completeness, and experiential fairness [39,40]. Accordingly, the present study analyzes Steam user reviews of *Road to Empress I* in order to examine how players articulate dissatisfaction with monetization design and how such dissatisfaction reflects broader tensions among immersion, value, and expectation in interactive cinematic game experiences.

3. Methodology

3.1. Research Design

This study adopts an observational single-case research design to examine how players discuss and evaluate *Road to Empress I* on Steam, with particular attention to monetization-related dissatisfaction. A single-case design is appropriate because the game provides a concentrated context in which player reviews reflect not only gameplay experience, but also evaluations of price, content value, and commercial fairness. Rather than testing causal relationships, the study aims to identify salient discursive patterns and evaluative tendencies in naturally occurring user-generated reviews.

Methodologically, the study employs a mixed text-analytic approach. First, descriptive text analysis is used to identify salient terms and semantic relations in the corpus through word frequency, Term Frequency-Inverse Document Frequency (TF-IDF) weighting, co-word co-occurrence, and semantic network visualization. Second, sentiment analysis is conducted on the review corpus using machine-generated sentiment scores calibrated through manual validation. Third, monetization-related reviews are identified through a two-stage screening procedure that captures both explicit monetization expressions and indirect evaluative indicators. Fourth, the monetization-related subset is analyzed through LDA topic modeling to reveal its major thematic structures. Finally, sentiment variation is compared across the identified monetization topics.

This design allows the study to move from broad corpus-level description to focused interpretation of monetization-related discourse. In this way, the methodology follows the analytical logic presented in Section 4 by first describing the overall textual and evaluative profile of the corpus, then isolating monetization-related reviews, and finally examining their thematic structure and emotional orientation.

3.2. Data Source and Review Collection

This study uses user reviews from Steam as its data source. Steam was selected because its review system is attached to the product store page and closely associated with actual purchase and play behavior, which makes it a useful setting for examining how players evaluate and discuss game experiences after use. The research object of this study is *Road to Empress I*, and all review data were collected from the game's corresponding store-page review section.

The data were collected on 23 June 2026, and the review publication period covered in the dataset ranges from 9 September 2025 to 22 June 2026. At the time of collection, the number of non-Chinese reviews on the game's store page was relatively small. Since this study focuses on textual expressions of user experience and seeks to preserve semantic comparability in subsequent analysis, only Chinese-language reviews were included in the data collection. In practice, the initial retrieval first followed the platform's Chinese-language filtering logic, and the language of the retrieved reviews was further checked during the cleaning stage.

The review data were obtained using a custom web-scraping script. To reduce privacy risks and comply with ethical considerations, the collection process did not include user

IDs, usernames, profile links, or any other personally identifiable information. Only four fields were retained for analysis: Advice, GamePlayTime, PublishDate, and Comment. Among them, Comment provided the main textual material for subsequent analysis, while the other three fields were used to support descriptive examination of recommendation tendency, playtime characteristics, and review timing. Steam's native "recommended"/"not recommended" labels were retained as a descriptive platform-level indicator, but they were not used as a direct substitute for text-based sentiment classification.

Following this procedure, a total of 8676 raw reviews were obtained as the initial dataset. These data were then subjected to a multi-step screening and preprocessing procedure, which is described in the following subsection.

3.3. Sample Screening and Preprocessing

After data collection, the review dataset was subjected to a multi-step sample screening and text preprocessing procedure before the formal analysis. The purpose of this stage was to improve the comparability and interpretability of the review texts by removing invalid or low-quality entries and by standardizing the corpus for subsequent analysis. Since this study relies on Chinese user reviews to examine user experience, narrative evaluation, and perceptions of monetization, careful preprocessing was necessary to ensure that the retained reviews were suitable for later text, sentiment, and thematic analysis.

Starting from 8676 raw Steam user reviews, the dataset first underwent an initial validity check. In this step, system-generated default texts and other non-substantive entries were removed, resulting in 8667 usable reviews. Next, duplicate reviews were identified and deleted in order to avoid repeated observations influencing the analysis. This step removed 818 entries, reducing the dataset to 7849 reviews.

The remaining reviews were then filtered by language. Following the Chinese-language criterion established in the previous subsection, non-Chinese reviews and entries with insufficient Chinese textual content were excluded to maintain semantic consistency within the dataset. A total of 141 reviews were removed at this stage, leaving 7708 reviews.

In the next step, overly short reviews were screened out because they generally lacked sufficient semantic content for meaningful interpretation. This procedure removed 186 entries and reduced the final analytical sample to 7522 reviews. Finally, the dataset was checked for garbled or otherwise abnormal records, such as unreadable strings or heavily corrupted text. No additional entries were removed in this step. Therefore, the final valid sample consisted of 7522 reviews, which formed the basis for all subsequent analyses.

To prepare the corpus for text analysis, several text preprocessing operations were applied. Before tokenization and keyword matching, all reviews underwent encoding correction and text normalization. This step was necessary because encoding errors could distort Chinese characters, interfere with the domain-specific custom dictionary, and reduce the accuracy of subsequent keyword matching. Because Chinese text does not contain explicit word boundaries, tokenization was performed before further analysis. To improve tokenization accuracy in the context of game-review discourse, the study developed a domain-specific custom dictionary. This dictionary included game titles, character names, chapter names, genre-related expressions, narrative and interaction terms, audiovisual descriptors, and monetization-related vocabulary. Representative examples included *Road to Empress*, *The Invisible Guardian*, Gaoyang Princess, "branching storyline", "multiple endings", "DLC", "paid unlock", and "cross-product bundling".

To reduce text fragmentation, a synonym normalization procedure was also introduced. Expressions with similar meanings but different surface forms were merged under unified analytical labels. For example, terms such as "recharge", "microtransaction", and related payment expressions were normalized into broader payment-related categories; several

expressions referring to immersion were grouped under a common label; and alternative descriptions of Interactive FMV formats, branching structures, endings, and selected complaints about monetization practices were also consolidated. This step helped reduce dispersion in word-frequency statistics and made the thematic patterns in user reviews more interpretable.

At the same time, a stop-word list was constructed to remove frequent but analytically uninformative expressions. These included generic references to the game itself, routine review-opening phrases, vague functional expressions, and formulaic evaluative wording that contributed little to substantive interpretation. Typical examples included phrases equivalent to “this game”, “personally speaking”, and “overall”. By filtering out such items, the analysis was better able to capture content-bearing terms related to narrative structure, user experience, audiovisual presentation, and perceptions of monetization touchpoints. The cleaned comment texts served as the common basis for all subsequent analyses. For text and topic analysis, the cleaned review corpus underwent tokenization, stop-word removal, and synonym normalization.

Overall, the sample screening and text preprocessing strategy was intended to produce a cleaner and more semantically coherent corpus while preserving the substantive meaning of user expressions as much as possible. Rather than altering the original opinions contained in the reviews, these procedures were designed to improve the reliability of subsequent analyses of user sentiment, discourse patterns, and review discussions related to narrative design and monetization.

3.4. Analytical Procedure

The analytical procedure consisted of a sequence of five linked stages designed to move from broad corpus description to targeted interpretation of monetization-related dissatisfaction. The process began with a descriptive text analysis of the full corpus through word frequency, TF-IDF, co-word co-occurrence, and semantic network visualization. Following this, sentiment analysis was conducted on the full corpus using continuous sentiment scores by SnowNLP (v. 0.12.3), which were then calibrated against manually annotated review samples for final binary classification. The subsequent stage involved a two-stage identification of monetization-related reviews utilizing both core monetization keywords and expanded indirect indicators. Once this subset was isolated, topic modeling was applied using LDA. Ultimately, the analysis concluded with a comparative examination of sentiment variation across the identified monetization topics.

3.4.1. Descriptive Text Analysis

The first analytical stage aimed to describe the text structure of the full corpus and identify the most salient concepts in player discourse. The analysis utilized two complementary indicators, specifically raw word frequency and TF-IDF weighting. Word frequency captured commonly recurring terms, while TF-IDF highlighted terms that were especially informative within the corpus rather than merely frequent. For descriptive interpretation, the study reported the top 30 terms ranked by TF-IDF together with their corresponding raw frequencies.

To further examine semantic relations among salient terms, co-word analysis was conducted. Co-occurrence was defined at the review level, meaning that terms appearing in the same review were counted as co-occurring. Based on the co-occurrence matrix of selected high-frequency terms, a semantic network graph was constructed to visualize structural relations among major concepts in player discourse. This step helped identify clusters of meaning linking gameplay experience, pricing language, recommendation behavior, and dissatisfaction.

This stage provided an empirical overview of the corpus and also informed the later identification of monetization-related discourse.

3.4.2. Sentiment Analysis

Although Steam provides a platform-level recommendation label (“recommended”/“not recommended”), this study did not treat that label as equivalent to textual sentiment. A review may recommend the game while still expressing substantial dissatisfaction with specific aspects such as monetization or branching design, and conversely, a non-recommended review may still contain praise for particular narrative elements. Therefore, text-based sentiment analysis was used to capture evaluative orientation more directly at the discourse level.

The second analytical stage involved sentiment analysis of the full review corpus. To assess the overall evaluative orientation of player discourse at scale, this study employed SnowNLP, a Chinese natural language processing toolkit that provides sentiment scores for textual input. SnowNLP generates a continuous sentiment value in the range of [0, 1], where higher values indicate more positive sentiment. For interpretive convenience, the original score was linearly transformed into the interval [−1, 1] using the formula:

$$S = 2 \times p - 1$$

where p denotes the original SnowNLP sentiment output and S denotes the transformed sentiment score. After this transformation, values closer to 1 indicate stronger positive sentiment, whereas values closer to −1 indicate stronger negative sentiment.

Because Steam review texts often contain mixed evaluations, qualified praise, sarcasm, and context-dependent criticism, the sentiment score generated by SnowNLP was not used as a direct binary label without calibration. Instead, the continuous scores were converted into binary sentiment categories through threshold calibration based on manual annotation. This step was necessary because the default midpoint does not necessarily correspond to the most appropriate classification boundary for domain-specific review data.

3.4.3. Identification of Monetization-Related Reviews

The third analytical stage identified monetization-related reviews through a rule-based keyword matching procedure. To improve methodological transparency, the revised manuscript clarifies the construction logic of the keyword scheme, the screening rule, and the preprocessing conditions under which matching was implemented.

Specifically, the identification procedure relied on two complementary keyword groups. The first was a core keyword group, designed to capture explicit monetization-related expressions, including references to payment, pricing, in-game purchases, refunds, downloadable content, and other directly commercial practices. The second was an expanded keyword group, designed to capture broader and more indirect expressions through which players discussed monetization-related concerns in review discourse. These included expressions associated with value for money, perceived incompleteness, split content delivery, post-purchase dissatisfaction, and promotional mismatch.

A review was classified as monetization-related if it contained at least one match from either the core keyword group or the expanded keyword group. This two-level design was adopted because players did not always discuss monetization through formal pricing vocabulary alone. In many cases, monetization concerns were expressed indirectly through evaluative language related to fairness, purchase value, completeness of content, or dissatisfaction with how content was released and marketed.

To improve consistency, keyword matching was implemented only after prior text preprocessing, including encoding correction, text normalization, custom dictionary-based tokenization, synonym normalization, and stop-word removal. In operational terms, the

screening rule followed an inclusive logic: any review containing at least one matched indicator from either keyword group was retained in the monetization-related subset for subsequent analysis.

Given the indirect and context-sensitive nature of some player complaints, this procedure was designed to prioritize substantive relevance and interpretability of the identified subset rather than to claim exhaustive capture of all monetization-related reviews.

3.4.4. Topic Analysis of Monetization-Related Reviews

After the monetization-related subset had been identified, topic modeling was conducted to examine its internal thematic structure. LDA was used to identify recurring clusters of words that tended to appear together across reviews and thereby reveal major topics within monetization-related discourse.

Candidate topic numbers ranging from 3 to 9 were compared. Model selection was based on a combination of coherence, log perplexity, topic distinctiveness, and interpretability. Although models with larger topic numbers could sometimes show slightly stronger quantitative performance, the final model was selected by balancing statistical indicators against thematic clarity and substantive usefulness.

Intertopic distance visualization was used as a supplementary aid in assessing topic separability. Representative keywords and review excerpts were also examined to assign meaningful interpretive labels to each topic. Topic prevalence was summarized on the basis of dominant-topic assignment for each review after model estimation.

This stage provided a focused thematic account of monetization-related discourse, which then served as the basis for subsequent comparison of sentiment differences across topics.

3.5. Reliability and Validation Strategy

To ensure the robustness of the analysis, validation procedures were applied to both the sentiment classification and the monetization-related review extraction process. These procedures were intended to improve the transparency and credibility of the analytical results.

3.5.1. Validation of Sentiment Analysis

To validate the sentiment classification procedure, a random sample of 200 reviews was drawn from the cleaned Steam review corpus for manual annotation. The manual annotation was conducted by one researcher, who labeled each sampled review according to its dominant evaluative orientation as either positive or negative. Although a three-way framework including neutral or mixed sentiment was considered at an early stage, pilot coding showed that the boundary between genuinely neutral reviews and mixed evaluations was difficult to operationalize consistently in Steam review discourse. Many reviews contained both praise and criticism, but still conveyed a dominant overall orientation. For this reason, the final validation adopted a binary coding framework.

The manually annotated sample contained 141 positive reviews and 59 negative reviews. These labels were used as the reference standard for evaluating SnowNLP-based sentiment classification. Because SnowNLP produces continuous sentiment scores rather than direct categorical outputs, a series of candidate thresholds was tested to convert the transformed sentiment scores into binary labels. For each threshold, predicted labels were compared with the manual annotations, and model performance was evaluated using accuracy, precision, recall, class-specific F1 scores, and macro F1. Macro F1 was treated as the primary criterion because the manually annotated sample was not perfectly balanced and the study sought to maintain interpretive sensitivity to both positive and negative reviews.

The best-performing threshold was -0.53 . Under this threshold, the binary classification achieved an accuracy of 0.725, a macro F1 score of 0.685, and a weighted F1 score of

0.731. The F1 score for positive reviews was 0.797, whereas the F1 score for negative reviews was 0.574. These results indicate that the procedure performed better in identifying positive reviews than negative ones, but still provided a sufficiently transparent and empirically grounded basis for large-scale polarity analysis.

The validation results also suggest that SnowNLP should be understood as a corpus-level sentiment tool rather than a high-precision classifier for all forms of player discourse. In particular, reviews involving irony, mixed evaluations, or simultaneous praise of narrative content and criticism of monetization may remain difficult for an off-the-shelf sentiment model to classify accurately. Accordingly, the sentiment results reported in this study are interpreted as indicators of general evaluative tendency rather than exact measurements of emotional nuance in every individual review.

3.5.2. Validation of Monetization-Related Review Identification

To assess the precision of the monetization-related review extraction procedure, 100 reviews were randomly sampled from the identified monetization-related subset for manual verification. Each sampled review was examined to determine whether it substantively addressed monetization-related issues, including pricing, refundability, content fragmentation, perceived incompleteness, or broader judgments of commercial unfairness and poor value.

This validation was designed primarily as a precision-oriented check of the extraction procedure. More specifically, it assessed whether reviews captured by the keyword-based screening were substantively relevant to monetization-related discourse. However, the validation did not estimate recall, because reviews outside the extracted subset were not manually sampled and examined for potentially missed monetization-related content. As a result, the procedure can demonstrate that the identified subset has high substantive relevance, but it cannot determine how many monetization-related reviews may have remained undetected in the full corpus.

This limitation is important because monetization-related dissatisfaction is not always expressed through explicit pricing vocabulary or stable evaluative phrases. Some reviews may discuss monetization only indirectly, implicitly, or through context-dependent expressions that fall outside the keyword lists. Accordingly, the extracted subset should be interpreted as a high-confidence set of identified monetization-related reviews rather than as an exhaustive measure of all monetization-related discourse in the corpus.

3.5.3. Validation of Topic Model Stability

The stability and interpretability of the LDA topic model were assessed through comparison of candidate topic-number solutions and close inspection of the resulting topic structures. Candidate models ranging from 3 to 9 topics were evaluated using coherence and log perplexity, while interpretive assessment focused on the distinctiveness, semantic consistency, and substantive usefulness of the resulting topics.

In addition to these quantitative indicators, intertopic distance visualization was used to examine the degree of separation among topics. Topic selection was based on both statistical fit and substantive interpretability. In addition to candidate topic-number comparisons, intertopic distance and representative review contexts were examined to ensure that the resulting topics corresponded to meaningful forms of player discourse.

4. Results

Sections 4.1 and 4.2 address RQ1 by describing the overall evaluative and semantic profile of the review corpus. Sections 4.3 and 4.6 address RQ2 through sentiment comparison

between the full corpus and the monetization-related subset. Sections 4.4 and 4.5 address RQ3 by identifying and interpreting the major topics within monetization-related reviews.

4.1. Descriptive Characteristics of the Review Corpus

The cleaned review corpus consisted of 7522 Chinese-language Steam user reviews of *Road to Empress I*. To obtain an overview of the review corpus, descriptive text analysis was conducted using word frequency and TF-IDF statistics. Table 1 presents the top 30 terms ranked by TF-IDF value together with their frequencies.

Table 1. Top 30 word frequencies and TF-IDF values.

Rank	Term	TF-IDF Value	Frequency
1	fun	0.03591626	891
2	game	0.03353058	3562
3	storyline	0.03341539	3081
4	The Empress Chapter	0.02264201	836
5	anticipation	0.01767506	627
6	like	0.01712458	822
7	actors	0.01616787	1042
8	Princess Gaoyang	0.01528639	981
9	production values	0.01338252	769
10	acting performance	0.01330639	736
11	production	0.01270738	564
12	history	0.01096585	1101
13	Meiniang	0.01089162	936
14	choices	0.01025439	831
15	ending	0.00981920	755
16	Interactive FMV Games	0.00979078	590
17	female protagonist	0.00936497	829
18	hope	0.00914701	513
19	visually appealing	0.00913018	320
20	immersion	0.00883706	405
21	choice	0.00881816	701
22	<i>The Invisible Guardian</i>	0.00867857	577
23	Li Tai	0.00849333	461
24	high-quality	0.00807311	240
25	experience	0.00805591	491
26	online	0.00792274	299
27	recommend	0.00790356	322
28	Bianji	0.00754545	451
29	enjoy playing	0.00753929	120
30	role	0.00728403	592

The TF-IDF results reveal that player evaluations were shaped primarily by a combination of entertainment value, narrative experience, character engagement, and production quality. Among the most salient terms, “fun,” “game,” and “storyline” occupy the highest positions, indicating that users frequently framed *Road to Empress I* not only as a playable product but also as a story-driven experience. In other words, the review discourse suggests that players evaluated the title through both ludic and narrative expectations.

A particularly notable feature of the TF-IDF list is the prominence of character- and route-related terms, including “The Empress Chapter,” “Princess Gaoyang,” “Meiniang,” “Li Tai,” and “Bianji.” These terms indicate that user discussions were often anchored in specific characters, story routes, and relationship dynamics. Rather than discussing the game only in abstract terms, many reviewers referred directly to concrete narrative lines and role portrayals. The presence of “female protagonist” and “role” further suggests that

gendered characterization, identity positioning, and the construction of the central playable role were recurring points of attention.

The salience of “choices,” “choice,” “ending,” “immersion,” and “Interactive FMV Games” also points to the importance of interactive narrative design in player evaluation. These terms suggest that reviewers paid close attention to how decisions shaped story progression, whether branching paths felt meaningful, and how effectively the game produced a sense of immersion. Such findings are consistent with the genre expectations associated with Interactive FMV Games, in which the perceived quality of the experience depends not only on story content but also on the degree to which interaction appears consequential.

At the same time, several highly ranked terms reflect the importance of audiovisual and performance-related evaluation. Terms such as “actors,” “acting performance,” “production values,” “production,” and “visually appealing” indicate that players were highly attentive to acting quality, costume design, set presentation, and overall production standards. This suggests that user evaluation of *Road to Empress I* was not limited to storyline alone, but extended to the quality of performance and visual realization through which the narrative was delivered.

Finally, the appearance of terms such as “history,” “*The Invisible Guardian*,” “recommend,” and “hope” suggests that reviews were also shaped by broader interpretive frameworks, including historical imagination, genre comparison, and future expectations. The reference to *The Invisible Guardian* is particularly noteworthy because it implies that players often situated *Road to Empress I* within an existing tradition of Chinese Interactive FMV Games and evaluated it comparatively rather than in isolation.

Taken together, the text profile of the review corpus shows that player discourse centered on five highly visible dimensions: narrative quality, character and route attachment, interactivity and endings, audiovisual performance, and genre- or history-based comparison. These descriptive findings provide a text overview of the review corpus and establish a foundation for the co-word structural analysis presented in the following section.

4.2. High-Frequency Terms and Co-Word Structure

To further examine how the most salient terms were connected in player discourse, a co-word matrix was constructed based on the preprocessed review corpus. By identifying how frequently high-frequency terms appeared together within the same review context, this analysis makes it possible to move beyond isolated keywords and observe the semantic structure underlying user evaluations. Table A1 presents an excerpt from the co-occurrence matrix of selected high-frequency terms.

The co-word structure shows that storyline occupied a central position in the semantic organization of the review corpus. It displayed strong co-occurrence relationships with “game” (769), “actors” (462), “production values” (391), “acting performance” (353), “history” (346), “choices” (333), and “ending” (284). This indicates that players did not evaluate narrative content as an isolated dimension. Instead, storyline was consistently linked to performance quality, visual presentation, historical atmosphere, interactive design, and narrative closure. For many players, the value of the game’s story appears to have depended on how effectively it was embodied through acting, production, and branching progression.

A second important pattern is the concentration of character- and history-related discourse. Terms such as “Princess Gaoyang,” “Meiniang,” and “history” formed a closely connected semantic cluster. For instance, “Princess Gaoyang” co-occurred with “history” 137 times, with “Meiniang” 107 times, and with “ending” 124 times, while “history” and “Meiniang” co-occurred 201 times. These associations suggest that player engagement was often organized around specific historical figures, relationship-centered plotlines, and historically resonant settings. This pattern reinforces the earlier TF-IDF finding that users

frequently approached the game through concrete character routes rather than through abstract discussion of story quality alone.

A third pattern concerns the close linkage between audiovisual presentation and narrative evaluation. “Actors” showed strong co-occurrence with “acting performance” (416), “production values” (320), and “storyline” (462), while “production values” also co-occurred substantially with “acting performance” (252). These relationships indicate that players tended to evaluate the game as an integrated performative experience. In other words, narrative appreciation was closely intertwined with perceptions of acting quality, visual style, and overall production standards, rather than being treated as a purely textual feature.

The matrix also highlights the role of interactivity in user evaluation. The co-occurrence between “choices” and “ending” (157), together with the broader connections between “choices,” “storyline,” and “game,” suggests that players were attentive to whether decisions generated meaningful narrative consequences. This finding is significant because it shows that interaction was not peripheral to player discourse; rather, it formed part of the evaluative core through which users assessed the success of the game as an Interactive FMV experience.

Taken together, the co-word analysis indicates that user evaluations of *Road to Empress I* were structured around a tightly interconnected set of topics: storyline, characters, historical framing, acting and production quality, and interactive outcomes. These dimensions did not appear as separate strands of discussion, but as mutually reinforcing components of a single evaluative framework.

As further illustrated in Figure 1, the co-word analysis shows that storyline occupied a central position in the semantic structure of the review corpus. It was closely connected with terms such as “game,” “actors,” “acting performance,” “production values,” “choices,” and “ending,” indicating that players did not discuss narrative quality in isolation. Instead, storyline was evaluated together with performance, visual presentation, and interactive progression.



Figure 1. Semantic network graph.

The network also reveals a strong association between narrative and audiovisual performance. Terms related to acting and production were closely linked with “storyline,” suggesting that players often assessed *Road to Empress I* as an integrated narrative-performance experience rather than as a purely text-based interactive game.

In addition, interactivity and character discourse remained important elements in the network. The links among “choices,” “ending,” and “The Empress Chapter” suggest that players paid attention to branching structure and narrative consequences, while terms such as “Princess Gaoyang,” “Meiniang,” and “history” indicate the continued importance of character routes and historical framing.

As shown in Figure 1, “storyline” was the most highly connected node in the semantic network, while “anticipation” also appeared to serve as a bridging term across several topics. Overall, the co-word structure suggests that player evaluations of *Road to Empress I* were organized around a combination of narrative quality, performance, interactivity, and character-based historical engagement.

4.3. Sentiment Distribution of Steam User Reviews

Before the main corpus-level sentiment analysis, an initial three-category framework distinguishing positive, neutral or mixed, and negative reviews was considered. However, preliminary inspection of the manually coded sample suggested that the neutral or mixed category was difficult to apply consistently in the context of Steam user reviews. Many Steam user reviews contained both praise and criticism, but still conveyed a dominant overall evaluative orientation. As a result, the final sentiment analysis adopted a binary framework distinguishing positive and negative reviews.

To improve classification reliability, a manually annotated validation sample of 200 reviews was constructed from the cleaned corpus. This manual annotation was conducted by one researcher, who coded each review as positive or negative according to its dominant evaluative orientation. Because the validation was performed by one coder rather than multiple independent coders, intercoder reliability was not calculated. Among these reviews, 141 were labeled as positive and 59 as negative according to their dominant evaluative orientation. SnowNLP was used to generate continuous sentiment scores for the sampled reviews, and the scores were linearly transformed from the original [0, 1] range to [−1, 1] for interpretive convenience. Multiple thresholds were then tested to determine the most appropriate cut-off point for binary classification.

The best-performing threshold was −0.53. As shown in Table 2, this threshold yielded an accuracy of 0.725, a macro F1 score of 0.685, and a weighted F1 score of 0.731. Performance was stronger for positive reviews ($F1 = 0.797$) than for negative reviews ($F1 = 0.574$), indicating that the method was more effective at identifying broadly favorable evaluations than more critical ones. This weaker performance for negative sentiment classification is important for interpretation, especially because later analyses draw attention to dissatisfaction and monetization-related criticism. Accordingly, the sentiment results reported here should be understood as approximate indicators of polarity distribution rather than precise measurements of the prevalence or intensity of negative evaluation. In particular, findings concerning dissatisfaction should be interpreted cautiously, as some negative or mixed reviews may not have been classified as negative with equal reliability.

Using this validated threshold, binary sentiment classification was applied to the full review corpus of 7522 valid Steam user reviews. As shown in Figure 2, the sentiment distribution of the full review corpus is strongly skewed toward positive evaluations. Specifically, 6651 reviews were classified as positive, accounting for 88.42% of the corpus, while only 871 reviews were classified as negative, representing just 11.58%. Overall, the review environment surrounding *Road to Empress I* was therefore strongly positive in aggregate emotional orientation.

This predominance of positive sentiment is broadly consistent with the platform logic of Steam, where players often post reviews to express appreciation, recommendation, or support for a game they enjoyed. At the same time, the presence of 871 negative reviews

remains analytically important. Although they represent a minority of the corpus, these reviews likely concentrate player dissatisfaction related to gameplay logic, branching design, technical issues, pricing concerns, or monetization-related frustrations. For this reason, the negative subset remains central to the later analysis of monetization-related discourse.

Table 2. Validation Results for the Binary Sentiment Classification.

Metric	Value
Validation sample size	200
Manual positive reviews	141
Manual negative reviews	59
Best threshold	−0.53
Accuracy	0.725
Macro F1	0.685
Positive F1	0.797
Negative F1	0.574

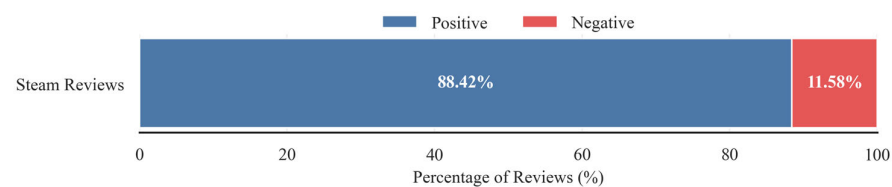


Figure 2. Distribution of Binary Sentiment in Steam user reviews.

Overall, the results support the use of calibrated binary sentiment classification as a practical method for identifying broad evaluative tendencies in large-scale Steam review data. At the same time, the findings should be interpreted with caution, since automated sentiment tools remain limited in handling irony, mixed judgments, and context-sensitive player expression. This caution is particularly relevant for negative sentiment, which showed weaker validation performance than positive sentiment. The sentiment results reported here are therefore used primarily as descriptive indicators of general polarity distribution, and interpretations concerning dissatisfaction should be treated as suggestive rather than definitive.

4.4. Monetization-Related Review Subset

To examine how players discussed monetization in *Road to Empress I*, a monetization-related review subset was constructed from the full corpus of 7522 valid Chinese-language Steam user reviews. The final subset contained 1012 reviews, accounting for 13.45% of the corpus, and served as the basis for the subsequent topic modelling and focused sentiment analysis. Because the validation strategy prioritised precision rather than recall estimation, this figure should be interpreted as the size of the identified high-confidence monetization-related subset rather than as an exhaustive estimate of all monetization-related reviews in the corpus.

The subset was identified through the two-stage screening procedure described in Section 3. In the first stage, reviews containing explicit monetization-related expressions, such as references to price, payment, refund, DLC, or separate sales, were identified through a core keyword list. In the second stage, the screening scope was expanded to include indirect but substantively relevant expressions, such as “unable to get a refund,” “half-finished product,” and “not worth it”.

This second stage was necessary because monetization-related dissatisfaction in Chinese-language Steam user reviews was often expressed indirectly rather than through formal pricing vocabulary. Instead of explicitly mentioning “monetization” or “payment,” players frequently framed their concerns in terms of incomplete content, split delivery,

misleading promotion, or poor value for money. Accordingly, the expanded indicators were designed to capture expressions signalling dissatisfaction with perceived value, fragmented content delivery, or post-purchase monetization, including references to “bought it,” “the second part,” or later content not yet released. In this way, the final screening procedure captured not only direct references to monetization, but also player evaluations of how monetization was experienced in practice.

To assess the validity of this expanded screening procedure, 100 reviews were randomly sampled from the monetization-related subset and manually examined by a single researcher. As this verification was conducted by one individual, intercoder reliability was not applicable. All 100 sampled reviews were confirmed to be genuinely related to monetization, indicating very high precision in this validation sample. At the same time, this validation does not provide an estimate of recall, because reviews outside the extracted subset were not manually screened for missed monetization-related content. Therefore, the 1012 reviews identified here should be understood as a high-confidence monetization-related subset rather than as an exhaustive count of all monetization-related discourse in the full corpus.

The final label, *monetization_final*, therefore integrated both explicit and expanded signals of monetization discourse. A review was retained if it either directly referred to monetization-related concepts or indirectly expressed dissatisfaction with pricing, content completeness, refundability, or monetization structure in a substantively relevant way. This subset was designed to capture not only explicit monetization features, but also the ways in which players perceived, experienced, and discussed monetization in practice. This distinction is particularly important in Interactive FMV Games, where pricing, episodic release, and narrative completeness are often closely intertwined in user experience.

4.5. Topic Patterns in Monetization-Related Reviews

To further examine the thematic structure of player discourse surrounding monetization, this study applied LDA to the 1012 monetization-related reviews identified in the previous section. The aim was to uncover the major thematic patterns through which players discussed monetization, evaluated value for money, and interpreted the implications of pricing and content delivery in *Road to Empress I*.

To ensure methodological transparency and reproducibility, the topic modeling procedure was conducted in Python (v. 3.13.9). Text preprocessing and tokenization were performed using the Jieba library (v. 0.42.1), followed by the removal of standard stop words and punctuation. To construct the document-term matrix, a Gensim dictionary was created. Rare words appearing in fewer than 5 documents and highly frequent words appearing in more than 50% of the documents were filtered out to reduce noise and improve topic distinctiveness.

The topic modeling was implemented using the Gensim library (v. 4.4.0). To ensure stable and reproducible results, the training process was controlled using a fixed random seed (*random_state* = 42). The model was trained with 15 passes over the corpus and 100 iterations per document, using the default symmetric priors for document-topic density (*alpha*) and topic-word density (*eta*). Model selection was guided by semantic interpretability and the *C_v* topic coherence metric (*C_v* = 0.2910). Finally, the results were visualized using *pyLDAvis* (v. 3.4.0) to interpret intertopic distance.

To determine the optimal number of topics, LDA models ranging from 3 to 9 topics were compared using coherence and perplexity-related indicators. As shown in Figure 3, coherence scores varied across the candidate models. The 3-topic model achieved a relatively high coherence score (0.3055), outperforming the 4-, 5-, 6-, and 7-topic solutions and remaining close to the 8-topic and 9-topic models. Although the 9-topic model produced the highest coherence value, the improvement over the 3-topic model was limited and did not justify the loss of interpretability associated with a more fragmented topic structure.

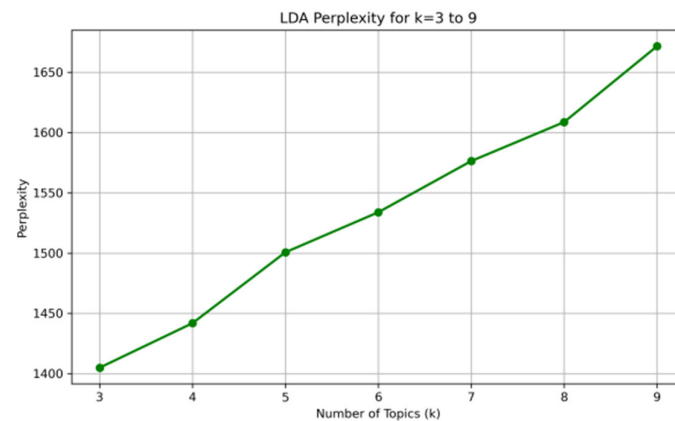


Figure 3. Coherence Scores of LDA Models with Topic Numbers from 3 to 9.

As shown in Figure 4, log perplexity decreased gradually as the number of topics increased. However, this improvement was incremental rather than substantial, and higher-topic models produced more fragmented and less interpretable thematic structures. For this reason, model selection was not based on log perplexity alone, but on the combined consideration of coherence, perplexity, and semantic interpretability.

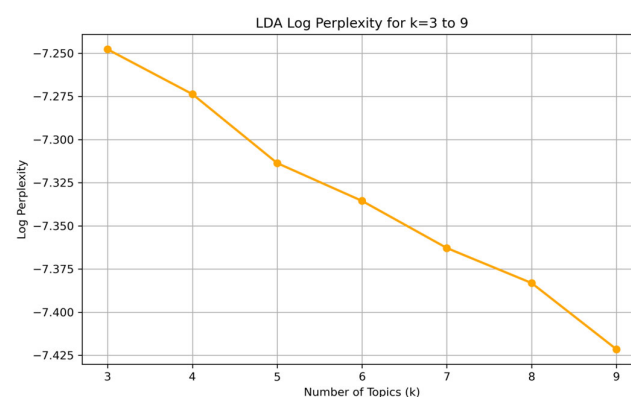


Figure 4. Log Perplexity of LDA Models with Topic Numbers from 3 to 9.

The intertopic distance map further supported this decision. Figure 5 presents the intertopic distance map of the final 3-topic model. The three topics are relatively well separated in the projected space, indicating that the model captures distinct thematic clusters within the identified monetization-related review subset. Their limited overlap supports the interpretability of the final solution and suggests that the extracted monetization-related reviews were organised around several identifiable patterns rather than one undifferentiated form of dissatisfaction.

On this basis, the 3-topic model was retained as the final solution. Table 3 summarizes the three interpreted topics, including their relative prevalence, representative keywords, and representative reviews. Based on dominant-topic assignment, Topic 1 accounted for 71.84% of all monetization-related reviews ($N = 727$), Topic 2 for 18.38% ($N = 186$), and Topic 3 for 9.78% ($N = 99$). Although the distribution was notably uneven, such imbalance is common in review-based topic modeling and, in this case, reflects the empirical prominence of particular concerns within the monetization-related review subset rather than a methodological weakness. More specifically, the results indicate that, within the identified monetization-related review subset, concerns about monetization were concentrated primarily on one dominant issue, while the other two topics represented more specific but still meaningful forms of evaluation.

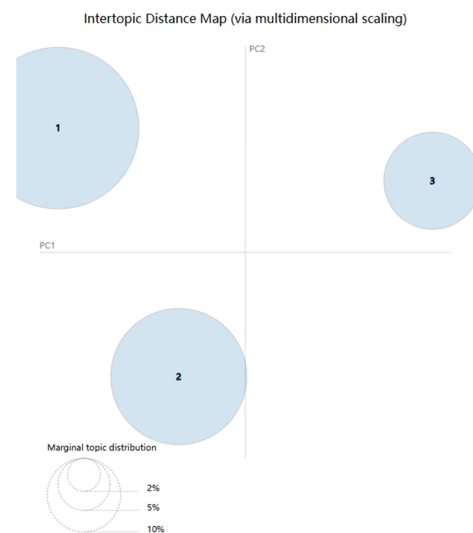


Figure 5. Intertopic Distance Map of the Final 3-Topic LDA Model.

Table 3. Results of the LDA topic model.

Topic ID	Topic Name	Representative Keywords	Proportion	Representative Review
Topic 1	Perceived Incompleteness and Fragmented Content Delivery	the second part, half-finished product, half, part, problem	71.84%	"After finishing the main storyline, I felt it was not worth the price. . ."
Topic 2	Refund-oriented Rejection and Emotional Backlash	refund, player, short drama, production, female, disgusting	18.38%	"This is a scam. The game title is already very straightforward. . ."
Topic 3	Price, Interactivity, and Value-for-money Evaluation	player, interaction, content, price, script	9.78%	"But the core of an interactive film game should still be its narrative and interactivity. Combined with the split-sales model, it is difficult to see it as good value for money. . ."

As shown in Table 3, Topic 1, labelled "Perceived Incompleteness and Fragmented Content Delivery," was by far the most dominant pattern. Its representative keywords included "the second part," "half-finished product," "half," "part," and "problem." These terms indicate a strong concern with content incompleteness and the perception that the game was being sold as an unfinished or structurally divided product. A representative review stated: "After finishing the main storyline, I felt it was not worth the price. . ." This topic suggests that, within the extracted reviews assigned to this cluster, monetization-related criticism was closely tied to players' expectations of narrative completeness and product integrity. In other words, monetization was not criticised merely because payment was required, but because players felt that they were being asked to pay for an experience that was only partially delivered.

By contrast, Topic 2, labelled "Refund-oriented Rejection and Emotional Backlash," captured a more emotionally intense mode of response and accounted for 18.38% of the corpus. Its representative keywords included "refund," "player," "short drama," "production," "female," and "disgusting." Compared with Topic 1, this cluster reflects a stronger sense of anger, betrayal, and direct repudiation. One representative review described the game as "a scam" and accused the developer of misleading players. The reviewer argued that, given the game's association with Wu Zetian, they had expected a play experience centred

on enthronement, political struggle, and the pursuit of political ambition, rather than the experience actually provided. This topic therefore reflects a pattern of discourse within the identified subset in which monetization-related dissatisfaction escalated into explicit refund demands, accusations of deception, and strong emotional rejection. It also indicates that some players judged monetization negatively not only in economic terms but also in relation to perceived mismatches between the marketed premise and the delivered experience.

Topic 3, labelled “Price, Interactivity, and Value-for-money Evaluation,” accounted for 9.78% of monetization-related reviews. Its representative keywords included “player,” “interaction,” “content,” “price,” and “script.” This topic reflects a more evaluative and comparatively less confrontational pattern of discourse, in which players discussed whether the game’s pricing was justified by its level of interactivity, content volume, and script quality. A representative review argued that, although the game’s production quality was strong, the core of an interactive film game should still lie in its narrative and interactivity, and that the split-sales model made it difficult to regard the game as good value for money. Compared with the more emotionally charged discourse of Topic 2, this topic is characterised less by outright rejection than by evaluative judgement concerning whether the game delivers sufficient interactive and narrative value relative to its price.

Taken together, the three topics indicate that the identified monetization-related reviews in *Road to Empress I* were organised around three major concerns: perceived incompleteness, refund-oriented rejection, and value-for-money evaluation. Importantly, these findings suggest that the concerns expressed in the identified monetization-related reviews extended well beyond narrow complaints about price alone. Instead, monetization was interpreted through a broader experiential framework involving narrative completeness, product identity, interactivity, and fairness.

Overall, the topic-modeling results indicate that, in the identified monetization-related review subset for *Road to Empress I*, monetization was discussed not merely as a payment mechanism, but as a design issue embedded in the game’s overall narrative and interactive experience. This is especially significant for interactive FMV games, where pricing, release structure, and content segmentation can directly shape immersion, story continuity, and player trust. The extracted topics therefore provide empirical support for understanding how monetization-related design choices were associated with player criticism and shaped perceptions of value in this case. Taken one step further, these topic patterns also suggest that, within the identified subset, dissatisfaction was shaped not only by price-related judgement, but by a perceived failure of the product to meet implicit expectations attached to the initial purchase. Across the three topics, reviews in the identified subset repeatedly evaluated monetization in relation to whether the game delivered a complete narrative experience, whether the marketed premise was adequately fulfilled, and whether the content offered was consistent with the value implied at the point of purchase. In this sense, the LDA results indicate that monetization-related criticism in the identified subset was closely connected to perceived expectation violation. This point is taken up further in the Discussion through the perspective of psychological contract breach. Given that the three topics reflected distinct forms of monetization-related discourse, the next step was to examine whether they also differed in emotional orientation.

4.6. Sentiment Variation Across Monetization Topics

To further examine how reviews in the identified monetization-related subset evaluated monetization-related issues, sentiment analysis was conducted on this subset and then compared across the three LDA-derived topics. Because negative sentiment classification performed less strongly than positive classification in the validation exercise, the following comparisons should be interpreted as descriptive patterns rather than precise

estimates of dissatisfaction levels. As shown in Table 4, monetization-related reviews were not uniformly negative. Among this subset, 790 reviews (78.06%) were classified as positive, while 222 reviews (21.94%) were classified as negative. Although positive sentiment still dominated overall, the monetization-related subset showed a noticeably less favourable distribution than the full review corpus. Specifically, the proportion of positive reviews declined from 88.42% in the full corpus to 78.06% in the monetization-related subset, while the share of negative reviews increased from 11.58% to 21.94%. A similar pattern was also reflected in the average sentiment scores: the monetization-related subset scored lower than the full review corpus (0.7432 vs. 0.7904). This suggests that reviews in the identified monetization-related subset were associated with comparatively more critical evaluation than the general review environment, although this pattern should be interpreted cautiously given the weaker classification performance for negative sentiment.

Table 4. Sentiment comparison across the full review corpus, monetization-related reviews, and monetization topics.

Group	Positive (%)	Negative (%)	Average Sentiment Score
Full Review Corpus	88.42	11.58	0.7904
Monetization-related Reviews	78.06	21.94	0.7432
Topic 1: Perceived Incompleteness and Fragmented Content Delivery	80.19	19.81	0.5240
Topic 2: Refund-oriented Rejection and Emotional Backlash	62.37	37.63	0.1807
Topic 3: Price, Interactivity, and Value-for-money Evaluation	91.92	8.08	0.7850

Substantial variation also emerged when sentiment was examined at the topic level. As reported in Table 4 and visualised in Figure 6, Topic 2, “Refund-oriented Rejection and Emotional Backlash,” was the most negatively perceived topic, with the highest proportion of negative reviews (37.63%) and the lowest average sentiment score (0.1807). This suggests that reviews centred on refund demands, regret after purchase, and emotionally charged rejection were associated with the highest concentration of negative classification within the identified monetization-related subset. However, because negative sentiment was classified less reliably than positive sentiment, this result should be read as an indicative pattern rather than a precise measurement of dissatisfaction intensity. In contrast, Topic 1, “Perceived Incompleteness and Fragmented Content Delivery,” displayed a more moderate sentiment profile. Although some players expressed dissatisfaction with incomplete content and fragmented release strategies, the topic still retained a predominantly positive distribution overall, with 80.19% positive reviews, 19.81% negative reviews, and an average sentiment score of 0.5240. This suggests that concerns over content structure and delivery, as expressed in this topic cluster, did not always translate into wholly negative evaluations.

By comparison, Topic 3, “Price, Interactivity, and Value-for-money Evaluation,” was the most positively perceived among the three topics. It showed the highest proportion of positive reviews (91.92%), the lowest proportion of negative reviews (8.08%), and the highest average sentiment score (0.7850). This finding suggests that when reviews in this topic framed the game as providing sufficient interactivity and reasonable value for money, monetization-related evaluations were more likely to remain favourable. In other words, responses to monetization within the identified subset were not determined solely by the presence of monetized content, but also by whether that content was perceived as fairly priced and meaningfully integrated into the gameplay experience.

Overall, the results demonstrate that sentiment within the identified monetization-related subset was clearly topic-dependent rather than uniformly negative. Negative classifications were most concentrated in discussions framed by refund requests, perceived unfairness, and emotional backlash, whereas more positive responses were associated with evaluations of affordability, interactivity, and value for money. Taken together, these

findings indicate that attitudes toward monetization, as expressed in the identified review subset, were shaped not only by monetization itself, but by the specific ways in which pricing, content completeness, and experiential value were interpreted in practice.

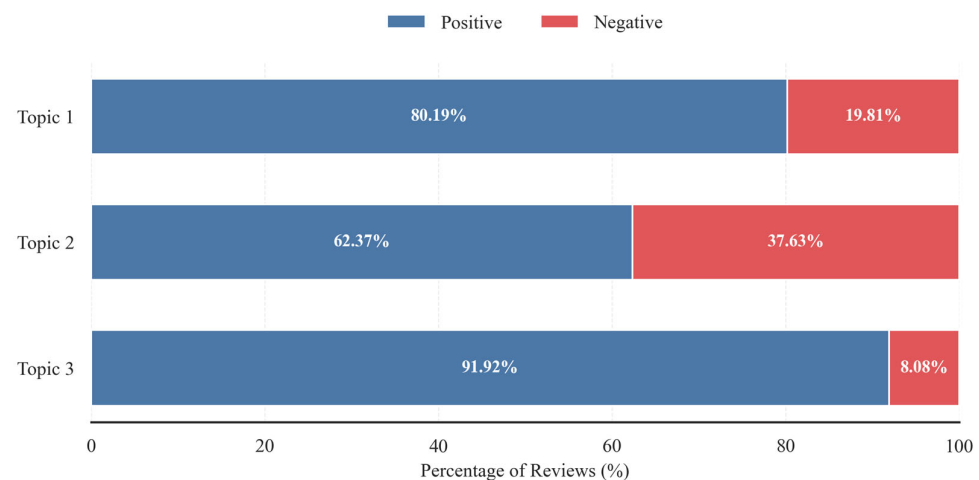


Figure 6. Positive and negative sentiment proportions across the three monetization-related topics.

5. Discussion

5.1. Interpreting the Main Findings

This study examined how *Road to Empress I* was evaluated on Steam and how monetization-related dissatisfaction, as reflected in user reviews, was embedded in broader user experience. The findings suggest that user evaluations of Interactive FMV Games were not organized around a single issue, but around a cluster of closely connected experiential dimensions, including narrative progression, character engagement, audiovisual performance, interactivity, and payment structure. Among these dimensions, narrative-related concerns occupied the most central position.

For RQ1, the results indicate that reviews in the full corpus primarily evaluated the game through the quality and continuity of its story experience. Narrative progression, character attachment, route development, and ending-related discussions appeared more central than technical or mechanical concerns. This pattern suggests that, in this case, users may not have approached the product in the same way they approach challenge-based or system-driven games. Instead, they appear to place particular value on whether the game can sustain a coherent, emotionally engaging, and interactively meaningful narrative experience. In this sense, story appears to function not merely as one feature among many, but as a major organizing principle of evaluation in this case.

At the same time, the findings show that narrative experience was rarely discussed in isolation. Player reviews frequently connected storyline with acting performance, visual presentation, branching choices, and route outcomes. This suggests that users understood the game as an integrated experience shaped jointly by narrative design, performed embodiment, and interactive progression. Such a pattern is consistent with existing research on interactive narrative and narrative-centered gameplay, which argues that user engagement in digital storytelling emerges from the interaction between story content, player agency, and emotional investment rather than from any one element alone [2,3,8,12,14].

For RQ2, the study found that the identified monetization-related review subset displayed a noticeably less favorable sentiment profile than the corpus as a whole. This indicates that monetization constituted a relatively sensitive evaluative domain within the identified subset, even though it did not dominate the full review corpus. In other words, while monetization was only one part of the broader review ecology, reviews

that raised monetization-related issues were associated with a more concentrated pattern of dissatisfaction.

For RQ3, the LDA results indicated that monetization-related dissatisfaction within the identified subset was organized around three recurring concerns: perceived incompleteness, refund-oriented rejection, and value-for-money evaluation. Importantly, these topics suggest that dissatisfaction in the identified subset was not directed at price alone. Rather, reviews in this subset evaluated monetization against a broader set of implicit expectations regarding narrative continuity, experiential completeness, and fair value delivery. When the product was perceived as fragmented, withheld, or insufficiently complete at the point of purchase, dissatisfaction appeared to stem not only from the cost itself, but from a perceived mismatch between what users expected to receive and what the product structure actually delivered.

This point is especially important in the context of Interactive FMV Games. Because the value of such games is closely tied to narrative continuity and emotional progression, monetization structures may be judged partly in terms of whether they preserve or disrupt the integrity of the experience. When reviews described the product as incomplete, segmented, or not worth the price, they often evaluated not only cost, but also whether the purchase fulfilled implicit expectations of meaningful continuation, narrative closure, and experiential coherence.

From this perspective, the acceptance of monetization in narrative-centered Interactive FMV Games may depend, at least in part, on whether paid content is perceived as extending an already satisfying experience or as restricting access to what users regard as essential narrative material. In other words, monetization design is more likely to be accepted when it is seen as additive rather than restorative.

Taken together, the three research questions suggest that, in this case, monetization in Interactive FMV Games is embedded in user experience not only because it affects access to content, but because it shapes whether the product is perceived as fulfilling the implicit experiential expectations attached to a narrative-centered purchase. This broader interpretive pattern provides the basis for the theoretical discussion below, especially from the perspective of psychological contract breach.

5.2. Theoretical Implications

The theoretical implications of this study can be understood at three related levels: disruption of narrative engagement, weakening of experiential continuity, and expectation-based evaluation of monetized content.

First, the findings extend discussion of narrative transportation in the context of interactive and narrative-centered digital media. Existing accounts of narrative transportation have often emphasized how external disruptions weaken immersion in relatively linear forms of media [6]. The present study suggests that, in narrative-centered Interactive FMV contexts such as the case examined here, monetization may function as a structural interruption that does not merely distract users, but reorients their evaluative stance from narrative engagement toward transactional assessment. When access to narrative continuation becomes conditional, players may no longer evaluate the experience primarily as story participants, but increasingly as purchasers judging whether the product has delivered what they expected. In this sense, the study suggests that transportation in interactive narrative products may be especially sensitive to interruptions embedded in the product structure itself, although this inference should be interpreted cautiously given the single-case design.

Second, the findings broaden discussion of game flow by suggesting that, in narrative-centered interactive products, flow-like continuity may be shaped not only by mechanics

or difficulty balance, but also by monetization structure. In the case examined here, dissatisfaction emerged when players perceived the narrative arc to be segmented in ways that weakened progression, disrupted continuity, or undermined the sense of a complete experience. This suggests that, for Interactive FMV Games, monetization architecture may operate as part of the experiential environment through which engagement is sustained or weakened. Accordingly, commercial design should not be treated as entirely external to user experience, especially in products whose appeal depends heavily on narrative progression and emotional continuity.

Third, the topic patterns identified in Section 4.5 provide an interpretive basis for understanding monetization-related dissatisfaction through the lens of psychological contract breach. The key point is that the LDA topics do not merely indicate what was criticized within the identified subset; they also suggest what users may have implicitly expected the initial purchase to include. Across the monetization-related topics, reviews in the identified subset repeatedly referred to incompleteness, misleading framing, disrupted continuity, and dissatisfaction with what was actually delivered after purchase. This suggests that users were evaluating the product not only in terms of price, but also in terms of whether the purchase fulfilled implicit expectations of narrative continuity, experiential completeness, and value consistency. When core narrative closure or continuation appeared to be withheld behind additional payment or delayed release, the resulting dissatisfaction could therefore be interpreted not merely as price resistance, but as a perceived breach of the expectations attached to the original transaction [39,40].

Taken together, these theoretical implications suggest that Interactive FMV Games should be understood as a hybrid form in which storytelling, interactivity, and monetization are tightly interwoven. Accordingly, theories of transportation, flow, and perceived value need to be further adapted to account for the fact that, in such products, commercial design is capable of intervening directly in core experiential processes rather than merely influencing post-experience purchase behavior. More broadly, the study suggests that monetization in narrative-centered interactive media may be more appropriately theorized not merely as an external economic layer, but as part of the user experience architecture through which immersion, satisfaction, and negative evaluation are jointly produced.

5.3. Practical Implications

This study also offers case-based practical implications for developers and publishers of Interactive FMV Games. The most important implication is that monetization design may usefully be approached as part of experience design rather than as a separate commercial decision. From this perspective, effective monetization design depends not only on pricing strategy, but also on whether the product structure remains consistent with users' implicit expectations of narrative continuity, completeness, and fair value. For narrative-centered games, users are not only paying for content, but also investing in story progression, emotional engagement, and the expectation of meaningful continuation. As a result, monetization strategies that weaken narrative coherence or create a strong sense of incompleteness are likely to generate dissatisfaction that exceeds ordinary price sensitivity. Developers should therefore evaluate monetization not only in terms of short-term revenue, but also in terms of its impact on narrative flow, perceived fairness, and player trust.

A second implication concerns chapter-based or installment-based release structures. The case examined in this study suggests that when only the first part of a larger story is available, and the continuation is released much later, users may experience the monetization structure as a disruption to the narrative experience rather than as a reasonable product arrangement. In the case of *Road to Empress*, only *Road to Empress I* was initially released, while *Road to Empress II* was launched in the following year. This separation appears to have

intensified player dissatisfaction because the story experience was interrupted at a moment when users still expected narrative continuation. Consistent with the findings reported in Section 4, both the high-frequency review terms and the identified monetization-related reviews indicate substantial dissatisfaction with this type of break. For developers, this means that if a two-part or multi-part structure is adopted, each installment should provide sufficient narrative closure on its own, while the relationship between installments should be communicated clearly and credibly in advance.

A third implication is that transparency and expectation management are essential in the commercial design of Interactive FMV Games. When users are uncertain about whether a title offers a complete experience, whether later chapters will require additional payment, or when subsequent content will become available, dissatisfaction is more likely to be amplified. Developers and publishers should therefore provide explicit communication regarding content boundaries, sequel planning, pricing logic, and update schedules. In addition, post-launch commercial content should preferably be emotionally additive rather than structurally compensatory. In other words, optional paid content is less likely to trigger resistance when it expands the experience without undermining the integrity of the core narrative. Overall, the findings suggest that sustainable monetization in Interactive FMV Games may depend on preserving narrative continuity, aligning payment design with perceived value, and reducing the gap between user expectation and actual product delivery.

5.4. Limitations and Future Research

Several limitations should be acknowledged when interpreting the findings of this study. First, the identification of monetization-related reviews was validated primarily in terms of precision rather than recall. The manual verification of 100 randomly sampled reviews confirmed that the extracted subset was highly relevant to monetization-related discourse, but reviews outside the extracted subset were not manually screened for potentially missed cases. As a result, the 1012 monetization-related reviews analyzed in this study should be understood as a high-confidence identified subset rather than as an exhaustive representation of all monetization-related discussion in the corpus. Accordingly, interpretations based on this subset should be read as analytically robust but non-exhaustive. More implicit, indirect, or context-dependent expressions of monetization concern may therefore remain underrepresented.

Second, a further limitation concerns the sentiment analysis. Although the calibrated binary procedure was adequate for broad descriptive corpus-level comparison, the validation results showed weaker performance for negative reviews than for positive reviews. This is particularly relevant because part of the analysis focuses on dissatisfaction within the identified monetization-related review subset. Accordingly, findings related to negative sentiment should be interpreted as approximate descriptive patterns rather than as precise estimates of the prevalence or intensity of dissatisfaction. Future research could strengthen this aspect by using larger manually annotated samples, multi-coder validation, or domain-adapted supervised sentiment models.

Third, although *Road to Empress I* provides a useful case for analysis, the single-case design of this study also limits the generalizability of the findings. It is possible that more acceptable forms of monetization differ across interactive genres. In romance-oriented FMV games such as *Road to Empress I*, immersion is closely related to emotional engagement, character attachment, and relationship development. In such cases, monetization may be more easily accepted when it expands the experience without interrupting the continuity of the main narrative. By contrast, in suspense or thriller FMV games, immersion may depend more strongly on tension, mystery resolution, and cognitive involvement. Under

these conditions, monetization that blocks key plot development or delays narrative closure may generate stronger dissatisfaction. This suggests that, although preserving narrative integrity remains important across genres, acceptable monetization design may still vary depending on the form of user experience involved.

Future research may therefore extend the present study in three directions. On the one hand, broader validation strategies could be adopted to estimate recall more directly and to capture more implicit forms of monetization-related discourse. In addition, sentiment analysis could be improved through larger annotated datasets and more domain-sensitive classification models, especially for the identification of negative and mixed evaluative expressions. On the other hand, comparative studies across multiple FMV titles and narrative genres would help determine which findings are case-specific and which may reflect more general patterns in the monetization of narrative-centered interactive media.

6. Conclusions

This study examined how players evaluated monetization in relation to user experience in Interactive FMV Games by analyzing 8676 Steam user reviews of *Road to Empress I*. Drawing on NLP-based text preprocessing, semantic analysis, sentiment analysis, and LDA topic modeling, the study identified the main dimensions of player concern, compared sentiment patterns between the full review corpus and the monetization-related subset, and examined the major topics through which players discussed monetization-related dissatisfaction. Across these analyses, the findings suggest that, in this case and within the identified monetization-related review subset, monetization was discussed not merely as a pricing arrangement, but as part of the broader experiential structure through which players evaluated narrative continuity, perceived completeness, and value.

The findings indicate that dissatisfaction within the identified monetization-related review subset was closely associated with three recurring concerns: interrupted narrative continuation, perceived incompleteness, and dissatisfaction with value for money. Importantly, these reactions were not directed at price alone. Rather, the monetization-related themes suggest that reviews in the identified subset evaluated payment structures against a broader set of implicit expectations regarding narrative coherence, experiential completeness, and fair value delivery. When access to continued content appeared to be restricted, delayed, or segmented in ways that weakened the sense of a complete experience, dissatisfaction seemed to arise not only from the cost itself, but also from a perceived mismatch between what players expected to receive and what the product structure actually delivered. More broadly, the results suggest that commercial design was evaluated not only in economic terms, but also in relation to continuity, fairness, and trust within the identified subset.

This study contributes to the literature in several ways. First, it enriches research on Interactive FMV Games by foregrounding monetization as an important experiential dimension rather than treating it solely as a commercial or pricing issue. Second, it extends discussion of narrative immersion and experiential continuity by suggesting that, in highly story-driven interactive products, monetization architecture may function as a structural interruption that shifts evaluation from narrative engagement toward transactional assessment. Third, it contributes to research on digital game monetization by showing that dissatisfaction in content-driven interactive products is closely related to perceived incompleteness and expectation-based evaluation, and may be understood through the lens of psychological contract breach rather than price sensitivity alone. In this sense, the study suggests that monetization in Interactive FMV Games may be embedded in the architecture of user experience itself, at least in narrative-centered cases such as the one examined here.

The findings also provide practical implications for developers and publishers of narrative-centered interactive games. Monetization design should be treated as an integral part of experience design, especially in products whose appeal depends on narrative continuity and emotional progression. Commercial strategies that fragment story delivery or create uncertainty about completeness are likely to intensify negative word-of-mouth and weaken player trust. By contrast, clearer communication, stronger narrative closure within each released installment, and monetization structures that remain consistent with players' expectations of fairness, completeness, and value may help reduce resistance and improve long-term acceptance.

Overall, this study suggests that in Interactive FMV Games, storytelling, interactivity, and monetization can be closely interconnected. When monetization is discussed as interfering with narrative continuity and experiential integrity, dissatisfaction may extend beyond willingness to pay and become a broader judgment about product quality and user experience. Accordingly, sustainable monetization in this genre may require not only commercial viability, but also careful protection of the narrative flow, perceived completeness, and expectation-consistent value on which player satisfaction depends.

Author Contributions: Conceptualization, M.Z. and W.L.; methodology, M.Z. and W.L.; software, M.Z. and W.L.; validation, M.Z. and W.L.; formal analysis, Y.Z.; investigation, W.L.; resources, Y.Z. and M.Z.; data curation, M.Z. and W.L.; writing—original draft preparation, M.Z. and W.L.; writing—review and editing, M.Z. and Y.Z.; visualization, M.Z.; supervision, Y.Z.; project administration, M.Z.; funding acquisition, Y.Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Guangxi Natural Science Foundation, grant number 2026GXNSFHA00640317.

Institutional Review Board Statement: This study was reviewed and approved by the Research Ethics Committee of the School of Management, Xiamen University Tan Kah Kee College (Approval Code: SM-XMUTKKC-2025-016X; approved on 2 September 2025). The study used publicly available online review data and involved no direct interaction with human participants.

Informed Consent Statement: The requirement for informed consent was waived by the Ethics Committee because this study relied exclusively on publicly available, anonymized online review data and involved no direct participation by human subjects.

Data Availability Statement: The data presented in this study were derived from publicly available Steam user reviews. The processed dataset and analysis materials supporting the findings of this study are available from the corresponding author upon reasonable request.

Acknowledgments: We thank the editor and anonymous reviewers for their constructive comments on this manuscript.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

DLC	Downloadable Content
FMV	Full-Motion Video
LDA	Latent Dirichlet Allocation
IDN	Interactive Digital Narrative
NLP	Natural Language Processing
TF-IDF	Term Frequency-Inverse Document Frequency

Appendix A

Table A1. Excerpt from the Co-word Matrix of High-frequency Terms.

	Fun	Game	Storyline	The Empress Chapter	Anticipation	Like	Actors	Princess Gaoyang	Production Values	Acting Performance	Production	History	Meiniang	Choices	Ending
Fun	789	129	117	124	110	63	91	42	48	63	47	31	29	34	39
Game	129	1794	769	209	187	289	376	221	293	272	228	351	279	300	266
Storyline	117	769	1855	244	229	276	462	247	391	353	234	346	237	333	284
The Empress Chapter	124	209	244	739	214	94	144	84	125	119	77	89	81	86	104
Anticipation	110	187	229	214	588	80	136	66	108	106	80	76	57	74	75
Like	63	289	276	94	80	645	150	106	111	112	68	107	98	113	102
Actors	91	376	462	144	136	150	854	126	320	416	156	156	114	158	147
Princess Gaoyang	42	221	247	84	66	106	126	656	87	91	52	137	107	113	124
Production Values	48	293	391	125	108	111	320	87	702	252	116	133	92	131	105
Acting Performance	63	272	353	119	106	112	416	91	252	660	114	110	72	120	112
Production	47	228	234	77	80	68	156	52	116	114	497	91	78	74	74
History	31	351	346	89	76	107	156	137	133	110	91	590	201	127	144
Meiniang	29	279	237	81	57	98	114	107	92	72	78	201	516	96	99
Choices	34	300	333	86	74	113	158	113	131	120	74	127	96	564	157
Ending	39	266	284	104	75	102	147	124	105	112	74	144	99	157	526

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