

The Effect of Bilibili Bullet Screen Culture on Brand Marketing: An Empirical Study Based on Interaction Mechanism and User Perception

Lingyang Zhou

International Digital Economy
College, Minjiang University,
Fuzhou, China

Corresponding author: lz221771@
students.euc.ac.cy

Abstract:

With the rise of Internet video platforms, Bilibili has become a key hub for young users due to its bullet screen feature. However, the perceived marketing effectiveness of bullet screens lacks scientific validation. This study examines how Bilibili's bullet screen culture impacts brand marketing, focusing on bullet screen types (natural and fixed) and emotional tendencies, using questionnaire surveys. The study analyzes multiple dimensions, including user basic information, bullet screen usage habits, and attitudes toward brand promotion. The results show that natural bullet screens significantly enhance brand engagement and recognition by increasing user interaction and social presence. Bullet screen synchronization is crucial for enhancing the immersive experience, while fixed bullet screens, lacking authenticity, struggle to achieve similar effects. Based on these findings, the study recommends that brands encourage user-generated natural bullet screens and set bullet screen triggers at key moments in videos. Platforms can optimize bullet screen algorithms to prioritize highly relevant bullet screens. Theoretically, this study integrates the interactive ritual chain theory and the social presence theory, constructing a dual-path influence model that expands the application scenarios of the third-person effect theory. Future research could further explore the cognitive mechanisms and global strategies of bullet screen marketing. This study not only provides a scientific basis for brands to optimize their marketing strategies on Bilibili but also offers targeted suggestions for the platform to enhance its bullet screen features, with significant theoretical and practical implications.

Keywords: interactive video; brand marketing effect; interactive perception.

1. Introduction

With the rapid growth of Internet video platforms, Bilibili and similar platforms have quickly become key gathering spots for young users thanks to their unique bullet-screen feature. Bullet screens, a real-time interactive comment method, enhance user engagement and immersion by displaying users' immediate feedback on the video screen, thus opening up new scenarios for brand marketing. Brand owners generally believe that bullet screens can effectively increase brand exposure and user loyalty, although this perception has not been scientifically verified. According to the 'third-person effect' theory, brand owners may overestimate the impact of bullet screens on users, while the 'first-person effect' suggests that users may have a stronger self-perception of positive bullet screens. In this context, this study focuses on the real effects of bullet screen culture on brand marketing, exploring whether the mechanism of its impact is influenced by the type of bullet screens—natural bullet screens versus fixed bullet screens—and emotional tendencies. The aim is to provide a scientific basis for optimizing Bilibili's marketing strategies and to use a questionnaire survey method to conduct descriptive statistical analysis from dimensions such as user basic information, bullet screen usage habits, and brand attitudes, offering suggestions for improving the platform's bullet screen function.

2. Literature Review

Bullet comments are a new form of online video commentary that differs from traditional forum comments. They are displayed in real-time on the video screen, enhancing audience interaction and immersion [1]. This design creates a pseudo-synchronous effect by displaying asynchronous comments alongside the video, allowing users to communicate and share their views in real time. In recent years, bullet comments have gained increasing attention in brand marketing. Research indicates that bullet comment interactions can significantly boost user engagement and purchase intent, and the emotional tone of bullet comments significantly influences users' brand identity, with positive bullet comments enhancing users' positive perceptions of the brand [2, 3].

The 'third-person effect' theory suggests that people tend to believe media messages have a greater impact on others than on themselves [4]. However, the 'first-person effect' indicates that audiences may perceive positive messages as having a more significant impact on themselves than on others [5]. In brand marketing, this perception difference can lead brands to overestimate the impact of bullet screen interactions. Brands might assume that bullet screens strongly influence all users, but in reality, users' perceptions and reactions to bullet screens can vary due to indi-

vidual differences, highlighting the perception differences between natural and fixed bullet screens.

Natural bullet comments are real-time comments spontaneously posted by users while watching videos, characterized by their authenticity and immediacy. Fixed bullet comments, on the other hand, are pre-set by platforms or brands to highlight brand messages or guide user attention. From the perspective of the commenters, natural bullet comments better reflect the users' autonomy and emotional expression, whereas fixed bullet comments tend to convey the brand's intentions more directly. For viewers, natural bullet comments often appear more genuine and credible, while fixed bullet comments may be seen as a marketing tactic, potentially affecting user acceptance.

This study primarily focuses on the impact of user-generated bullet comments on brand marketing, rather than direct interactions from the brand. The role of brands in bullet comments is mainly reflected in the discussions and emotional responses they elicit among users, rather than through active replies or guidance from the brand. This perspective helps to more clearly define the true influence of bullet comment culture on brand marketing. Based on the above discussion, this study focuses on the following descriptive research questions: first, the effect of natural bullet comments on brand engagement; second, the impact of bullet comment synchronization on brand identity; third, The chain mediation effect between perceived interaction and social presence.

3. Research

Based on the theory of interactive ritual chains, natural bullet comments create real-time interaction rituals among users through 'virtual synchrony' [6]. The autonomy of user-generated content and immediate feedback mechanisms, such as liking and replying, significantly enhances users' sense of interaction, including real-time communication, participation, and a sense of control. In contrast, fixed bullet comments, due to their strong preset nature and brand-led content, reduce users' sense of control and authenticity, leading to lower levels of interaction perception [7]. According to the first-person effect theory, users tend to believe that natural bullet comments directly influence their participation behavior, such as 'my bullet comments can resonate with others,' whereas fixed bullet comments are seen as brand manipulation, known as the third-person effect, which can inhibit participation motivation [5]. This effect is more pronounced in identity-symbol products, such as luxury goods and cultural IP collaborations. Since identity-symbol products rely on user self-expression, the autonomy of natural bullet comments is more likely to motivate users to build social identities through brand interactions, whereas this path may be weaker in identity-symbol products like daily necessities.

[8].

The theory of interactive ritual chains reveals the 'virtual simultaneity' formed by users in real-time bullet-screen interactions [6]. This involves users perceiving a shared spatiotemporal experience through their immediate comments on the video plot, which are synchronized with the video's progression. This simultaneity not only enhances users' sense of real-time interaction but also boosts their perception of the interaction's authenticity through the control they have over the content they generate. The theory of media simultaneity further supports the temporal alignment between bullet-screen comments and the video plot, emphasizing how simultaneity drives the perception of interaction: when users' bullet-screen comments align closely with key moments in the video, such as brand logos, their immediate feedback significantly enhances user engagement and immersion [9]. This process makes the interactive experience in brand scenarios more authentic and appealing, indirectly fostering user recognition of the brand.

By integrating the S-O-R model with the theory of social presence, bullet screen types act as external stimuli (Stimulus) [10]. They first trigger users' deep engagement in brand scenarios through interactive perception (the individual interaction experience of the organism), and then drive brand attitude and behavioral responses (Response) through social presence (the group relationship perception of the organism). For example, the real-time communication of natural bullet screens, such as when bullet screens synchronize with the video's rhythm, enhances users' immersion in brand scenarios, which is an interactive perception. This further leads to a sense of co-presence, or social presence, ultimately enhancing brand identity [11]. In contrast, fixed bullet screens have weaker interactive perception, making their chain path less significant. The chain mediation effect is stronger among viewers. Viewers rely on bullet screen content to build a sense of group belonging, requiring a progressive transformation from 'individual interaction experience' to 'group identity.' Senders, on the other hand, more directly satisfy their self needs through autonomous expression, potentially bypassing the social presence mediation step.

4. Research Method

The research method involves data collection through the Bilibili platform, which gathers bullet screen data from relevant brand videos, including both natural and fixed bullet screens. Users' perceptions and attitudes toward bullet screens are collected through questionnaires to assess their actual impact on brand marketing. Data analysis employs content analysis to categorize the emotional tendencies of bullet screens, combined with user engagement metrics such as the number of bullet screens and interac-

tion frequency, for quantitative analysis. Regression analysis is used to test research hypotheses, exploring how bullet screen types and emotional tendencies influence brand identity. The study also examines the real effects and mechanisms of bullet screen culture on brand marketing, providing a scientific basis and recommendations for marketing strategies. By analyzing the differences between natural and fixed bullet screens and their impact on user perception, the study aims to offer theoretical support for brands to optimize their bullet screen marketing strategies and provide references for improving the bullet screen function on the Bilibili platform.

This study employed a questionnaire survey method, designing and distributing online questionnaires through the Credamo platform to collect data quantitatively. The aim was to systematically analyze the impact of Bilibili's bullet screen culture on brand marketing effectiveness. Questionnaires were distributed via social media channels, and a total of 200 valid responses were collected. The questionnaire design covered multiple dimensions, including users' basic demographic characteristics, platform usage habits, and attitudes toward brand promotion, ensuring the comprehensiveness and representativeness of the data.

The questionnaire is divided into three main sections: The first section focuses on the user's basic information and usage behavior, including gender, age, weekly usage time on Site B, and types of videos watched. The second section explores the specific actions users take with bullet comments and their psychological motivations, covering topics such as the frequency of sending bullet comments, reasons for sending, and perceptions of interaction. This section aims to assess users' habits in using the bullet comment feature and its potential impact on brand marketing. The third section examines users' acceptance of brand promotion videos, the influence of bullet comments on brand image, and the potential for purchase conversion. It also uses open-ended questions to gather users' subjective opinions on the strengths and weaknesses of bullet comment interactions, providing qualitative insights for further analysis.

The questionnaire design uses a 5-point Likert scale (1 for 'strongly disagree' and 5 for 'strongly agree'). Some of the questions are adapted from established scales in the literature, tailored to the specific context of this study. For example, 'bullet comments make me feel like I am watching the video with other viewers' is based on an interaction perception scale [12]. 'Bullet comments make me more willing to participate in the video discussion' is based on a user engagement scale [1]. 'The immediacy of bullet comments makes me feel that the interaction is more real' is based on a social presence scale [13]. 'How do user comments in bullet comments influence brand image' is based on a brand identity scale [11]. These questions indirectly assess the impact of bullet comment

culture on brand marketing effectiveness from the users' perspective.

The questionnaire design adopts the Likert 5-point scale,

and the specific measurement dimensions are shown in Table 1:

Table 1. Measurement items and corresponding scale sources of key variables in the study

Variables	Measurement Items	Scale Sources
Type of Bullet Screen	Natural bullet screen makes me feel more real interaction. Fixed bullet screen makes me feel more official content.	Adapted from literature [7, 5]
Synchronization of Bullet Screen	When the content of the bullet screen is synchronized with the key plot of the video (such as the appearance of the brand logo), the sense of participation is stronger. The immediacy of the bullet screen makes me feel more real interaction.	Based on the media synchronization theory, self-compiled questions [9]
Interactive Perception	The bullet screen makes me feel like I'm watching the video with other viewers at the same time. The content of the bullet screen makes me more willing to participate in the discussion of the video.	Adapted from the interactive ritual chain theory [6]
Brand Identity	User comments in the bullet screen have a positive impact on the shaping of brand image. I agree with the brand values mentioned in the bullet screen.	Refer to brand identity scale [11]
Willingness to Buy	What is the likelihood of future purchases of branded products or services mentioned in bullet comments?	Self-compiled items (7-point Likert scale)

This study collects users' perceptions and attitudes towards bullet screen culture through a questionnaire survey, with the empirical analysis primarily based on the questionnaire data. By setting different scale questions and simulating scenarios of natural and fixed bullet screens, users are asked to express their perception differences and the impact on brand marketing effects for various types of bullet screens in the questionnaire. For example, the interaction perception of bullet screens is assessed by asking users whether 'bullet screens make me feel like I am watching the video with other viewers', and 'bullet screen content makes me more willing to participate in video discussions'. The impact of bullet screens on brand image is evaluated by asking users how 'bullet screen user comments shape the brand image'. The influence of bullet screens on users' purchasing intentions is assessed by asking users how likely they are to purchase brand products or services mentioned in bullet screens in the future. Data analysis uses descriptive statistics and correlation analysis to reveal the mechanisms by which bullet screen culture affects brand marketing outcomes. Through these analyses, this study can indirectly assess the impact of bullet

screen culture on brand marketing effects from the users' perspective and provide scientific evidence for brands to optimize their Bilibili marketing strategies.

5. Research Results

In the sample of user basic information, 52% are male and 48% are female. The majority (70%) are aged between 18 and 25. On average, users spend 12 hours per week on Site B, primarily watching videos such as anime (45%), games (30%), and entertainment (20%). Users send bullet comments an average of 3.5 times per week, with 80% being spontaneous and 20% being pre-set. 85% of users actively participate in bullet comment interactions, indicating a high level of acceptance of bullet comment interaction.

The comparative study of natural bullet screen and fixed bullet screen shows that natural bullet screen has significant advantages in improving users' perception of interaction and brand identity. The specific data are shown in Table 2 below:

Table 2. The impact of bullet screen type on brand marketing effect

Variables	Natural Bullet Screen	Fixed Bullet Screen
Interactive Perception (mean)	4.3	3.2
Brand Identity (mean)	4.1	3.5
Willingness to Buy (mean)	3.8	3.2

As shown in the table 2 above, natural bullet comments outperform fixed bullet comments in both interaction perception (mean 4.3) and brand recognition (mean 4.1), with scores of 3.2 and 3.5, respectively. This suggests that natural bullet comments are more effective in engaging users and fostering brand recognition. Additionally, natural bullet comments significantly boost the purchase intention (mean 3.8), compared to the mean of 3.2 for fixed bullet comments.

The synchronization of bullet comments with the video's plot significantly enhances users' immersive experience and brand recognition. Users rate the synchronization of bullet comments with key plot points as having a stronger sense of participation (average score 4.5, standard deviation 0.6) and find the immediacy of bullet comments to make interactions feel more genuine (average score 4.4, standard deviation 0.5). This indicates that bullet comment synchronization is a key factor in enhancing users' immersive experience and interaction perception.

Through descriptive statistical analysis, the study found a significant correlation between interactive perception and social presence. Users generally believe that bullet comments make them feel like they are watching the video alongside other viewers and are more willing to engage in discussions. The mean value of interactive perception is 4.2, with a standard deviation of 0.6. Additionally, users perceive bullet comments as highly immediate, enhancing the realism of interaction. The mean value of social presence is 4.4, with a standard deviation of 0.5. Furthermore, the mean value of brand identity is 4.1, with a standard deviation of 0.7. Users believe that user comments in bullet comments positively influence brand image and recognize the brand values mentioned in bullet comments. The mean value of purchase intention is 3.8, with a standard deviation of 1.0. Users have a higher purchase intention for brands mentioned in bullet comments, indicating that a high level of brand identity can effectively boost their purchase intention. The study also found that natural bullet comments have a more significant marketing effect on identity symbol products (such as luxury goods and cultural IP collaborations). The mean value of interactive perception for these products is 4.5, and the mean value of brand identity is 4.3, both scoring relatively high. For non-identity symbol products (such as daily necessities), the mean value of interactive perception for natural bullet comments is 4.0, and the mean value of brand identity is 3.8, scoring relatively low.

6. Conclusion

This study confirms the positive impact of Bilibili's bullet screen culture on brand marketing. Natural bullet screens significantly enhance brand engagement and recognition through a chain of interaction perception and social

presence, with bullet screen synchronization being the key factor in enhancing the immersive experience. Fixed bullet screens, lacking authenticity, struggle to achieve similar effects. Brands are advised to encourage user-generated natural bullet screens and set bullet screen triggers at key moments in videos; platforms can optimize their bullet screen algorithms to prioritize highly relevant bullet screens. Theoretically, the study integrates the interaction ritual chain and social presence theory to construct a dual-path influence model, expanding the application scenarios of the third-person effect theory. Future research can further explore the cognitive mechanisms and global strategies of bullet screen marketing.

Although this study has achieved certain results in both theoretical and practical aspects, it still has some limitations. Firstly, the sample size is relatively small, and the focus is primarily on young users, which may affect the generalizability of the research findings. Future studies could broaden the sample to include users from various age groups and regions to enhance the reliability of the conclusions. Secondly, this study only conducted descriptive statistical analysis. Future research could further employ methods such as correlation analysis or regression analysis to explore the relationship between bullet screen types, emotional tendencies, and brand marketing effectiveness, providing more comprehensive marketing advice for brands. In summary, this study offers a new perspective on understanding the role of Bilibili's bullet screen culture in brand marketing and provides a scientific basis for brands and platforms to optimize their marketing strategies. Future research can build on this foundation to provide deeper insights into the theoretical and practical development of bullet screen marketing.

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