

# Research on the Development Status and Optimization Measures of Bilibili Business Model Based on the Analysis of User Behavior Characteristics

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**Abstract.** As a fast-growing medium in China, Bilibili contains plenty of original user content and diverse communities. Its audience is mainly teenagers, which is highly productive in the era of big data. How Bilibili combines the Danmu mechanism, membership mechanism, and community culture with user behavior characteristics is a major issue to be explored. By combining the TAM and APEC models, this paper will first collect and analyze data through questionnaires to study the impact of users' age, gender, identity, and preferences on their experience of using Bilibili and their preferences for Bilibili features. Secondly, this paper will analyze the differences in user experience between users with different characteristics in terms of interaction, functions, and contents of the Bilibili website to summarize the best user experience features for different users. Further, this analysis leads to the conclusion that the strategies Bilibili needs to improve users' experience based on interaction, functions, and content.

**Keywords:** Bilibili, User Behavior Characteristics, Development Status, Optimization Measures

## 1. Introduction

### 1.1 Research background

Many industries are confronting high client acquisition costs and churn rates due to the rapid development of diversified business models and market sectors in big data. By analyzing user behavior characteristics to accurately locate different user behavior characteristics and optimize personalized user experience, the new media business will be favored by users and stand out in this era of big data. Founded in June 2009, Bilibili.com is a part of Shanghai Hode Information Technology Co., Ltd.. It has grown into a cultural community and video platform for young people, covering more than 7,000 interest circles. In March 2018, Bilibili was successfully listed on NASDAQ in the U.S.; in March 2021, it was successfully listed for the second time in Hong Kong. By the end of Q2 2021, Bilibili had 237 million average monthly active users, of which 86% were under the age of 35, ranking No. 1 on QuestMobile's "Z Generation Preferred Apps" list [1]. Bilibili, as a successful commercial website, has its target users and exclusive ways to attract users. The development status and optimization measures of its business model combined with user behavior characteristics are worth analyzing and studying.

### 1.2 Literature review

In order to understand how Bilibili develops its business model based on user behavior, the first step is to use big data analysis to understand the needs of different users. Only by understanding user needs can we design a successful user experience. Zhu proposed that big data analysis is divided into two types: one summarizes the present development and finds the pattern; the other summarizes the past data to predict the future trend. By using visual charts, the company can obtain user behavior patterns and predict user behavior trends [2]. Different researchers have analyzed user characteristics

differently and proposed different models for user experience research. Davis' study developed the Technology Acceptance Model (TAM). It analyzes users' cognitive processes towards information systems. The results show that social influence and cognitive instrumental processes significantly affect user acceptance. Users' behavioral intentions determine the actual use of information systems [3]. Vyas, Gerrit, and Vander explained that the design and appearance of interactive systems could affect the user experience and the system's feedback. This concept is referred to as the APEC model, where the design and appearance of a system are combined with the user's behavior and the system's feedback [4]. This model follows the essential principle of user experience: "communicating the intended meaning of an interaction between user and his environment through the coupling of action and feedback" [5]. Interaction design, content design, and functional design are the most important aspects of the website's user experience. And Bilibili's Danmu culture can combine these features to enrich the user experience. More specifically, Rui argues that danmu comments, danmu clusters, and danmu language improve users' feeling of virtual community on the dimensions of membership, influence, and immersion [6].

Based on SWOT, most articles have studied Bilibili's profitability, management, and marketing models. The others have studied Bilibili's impact on cross-cultural communication, its influence on young people's consumption habits, and its ability to spread mainstream values. However, few scholars have studied the relationship between user behavior and personal characteristics such as age and gender to optimize Bilibili's business model from the perspective of user experience. By studying user behavior and satisfaction, Bilibili can also improve the management of Danmu, customer service response, and feedback on issues, thus increasing user loyalty.

### 1.3 Research framework

Based on TAM and APEC models, this paper will first collect and analyze data through questionnaires to study the impact of users' age, gender, and preferences on their experience of using Bilibili and their preferences for Bilibili features. Secondly, this paper will analyze the differences in user experience between users with different characteristics in terms of interaction, functions, and contents of the Bilibili website to summarize the best user experience features for different users. Finally, in the context of the current development of Bilibili's business model, this paper will conclude the policies that need to be optimized and maintained.

## 2. Methods

Many researchers have utilized the SWOT model to analyze Bilibili's current business model.

However, there are current data about the features of users, like their ages and preference. To have a deeper insight into the current user groups of Bilibili, this paper chooses to survey 70 people of all ages by questionnaire. The questionnaire methods can be more useful for identifying and characterizing users' age distribution, frequently concerning contents, and the relationship between uploaders and audiences. Based on the previous data that the average user age is 22.8 years old [7], this paper supposes the main user group of Bilibili is Z Generation. Also, as Bilibili is an ACGN cultural community, this paper supposes users' frequently concerned contents are animations and original videos that show diverse cultures and lifestyles.

## 3. Results

In order to figure out the major user group of Bilibili and the distribution of user age, this paper analyzed the data collected in a questionnaire among 70 people in the Bilibili user group. Access Bilibili is a platform that is based on the ACGN culture and increasing diverse content. This paper researched the main contents that user groups choose to watch on Bilibili and the foremost service that user groups prefer.

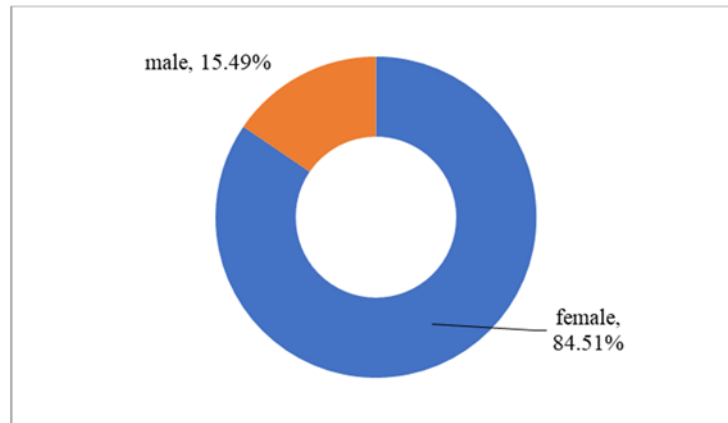


Figure 1. Users' Gender

What is striking about the figures in figure 1 is that more than 80% of users are female. Comparing with data of Bilibili user profile that shows male users account for 57%, the different proportion on account for only 70 people had participated in this questionnaire.

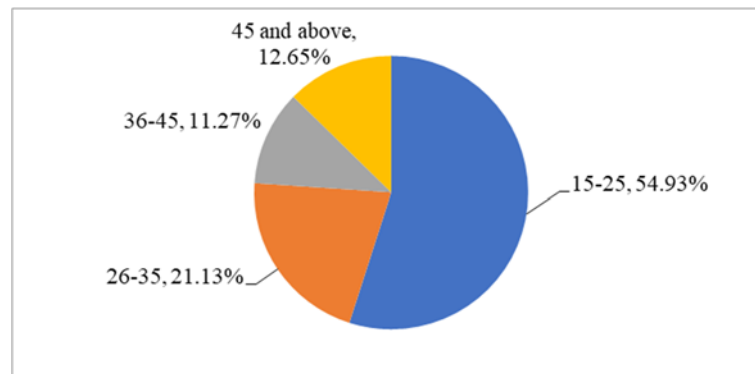


Figure 2. Users' Age

Figure 2 above shows that the group of 15-25 years old accounts for 54.93% (the largest proportion). As shown in pie chart 1, the 26-35 group reported significantly more people than the other groups (36-45, 45, and above). Based on the data, the characteristic of Bilibili's main user group is Z Generation (people born from 1995 to 2009). Also, there is a new trend that the user group is becoming diverse, and the group of 36 and above keeps growing larger to account for nearly a quarter.

Compared with the 2020 user profile of Bilibili, the user group of 18-35 years old accounts for 78% can also show that the dominant user group is Z Generation.

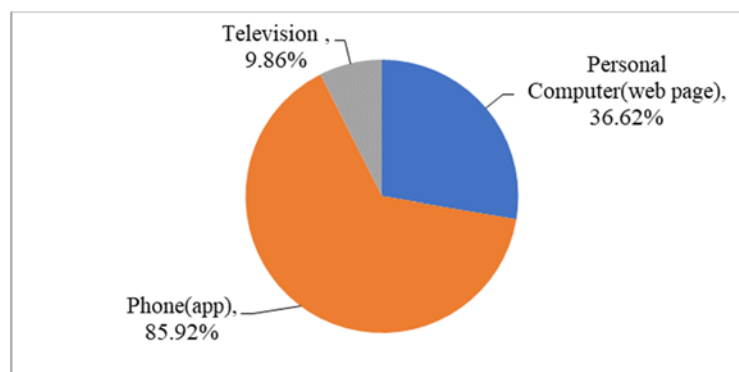


Figure 3. Client Devices

What stands out in figure 3 is that Bilibili's main client device is a phone (app). This data corresponds to the monthly active users of Bilibili on phones exceeding 200 million in the first quarter

of 2021, a year-on-year rise of 33% [8]. At the same time, daily active users on the phone have increased to 60 million, with year-on-year rises of 18% [9]. We can notice that Bilibili is successfully transforming itself into a pan-entertainment community, especially during the COVID 19 pandemic. During the pandemic, the whole video industry had increased substantially in 2020 with the increasing demand for online amusement and consumption. However, the growth of users still reached 30% in the first quarter of 2021 on Bilibili [10]. This data shows the positive side of the development of Bilibili, as the core user group of Bilibili is Z Generation, a large, dominant, and influential group. In addition, with a solid base, Z Generation has strong purchasing power and the ability to accept new things. Thus, the constant original and creative content can attract and retain most of the audience on Bilibili.

In addition, Bilibili has divided its user group into visitors, registered members, full members, and premium members. To become a full member, people need to pass the exam based on the fundamental information of good behavior on Bilibili. A positive correlation was found between the high user stickiness and the increasing number of full numbers. The retention rate kept maintaining over 80% and year-on-year rises of 56% in the third quarter of 2020 [11]. The harmonious community atmosphere of Bilibili is guaranteed by this basic exam initially.

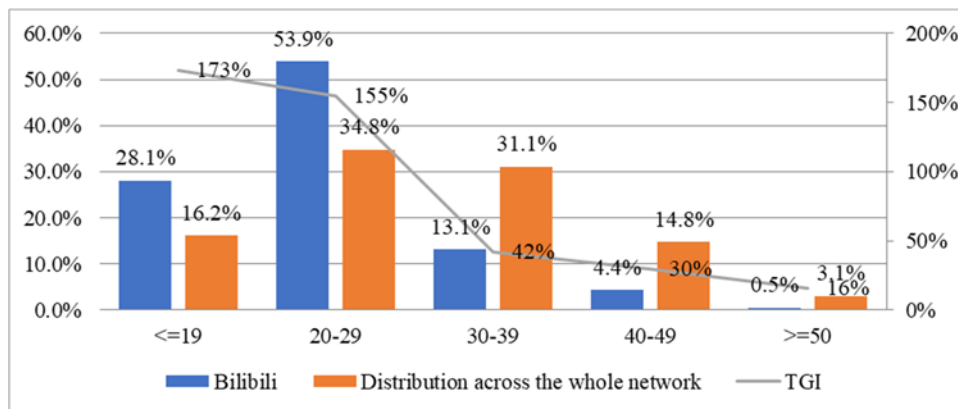


Figure 4. Users' Age distribution

Overall, figure 4 shows a huge gap between the Z Generation and other user groups, especially since it lacks audiences older than 40 years old. In order to adapt to the pan-entertainment industry, Bilibili must learn how to retain its unique original contents and enrich its contents for the audience group at an older age.

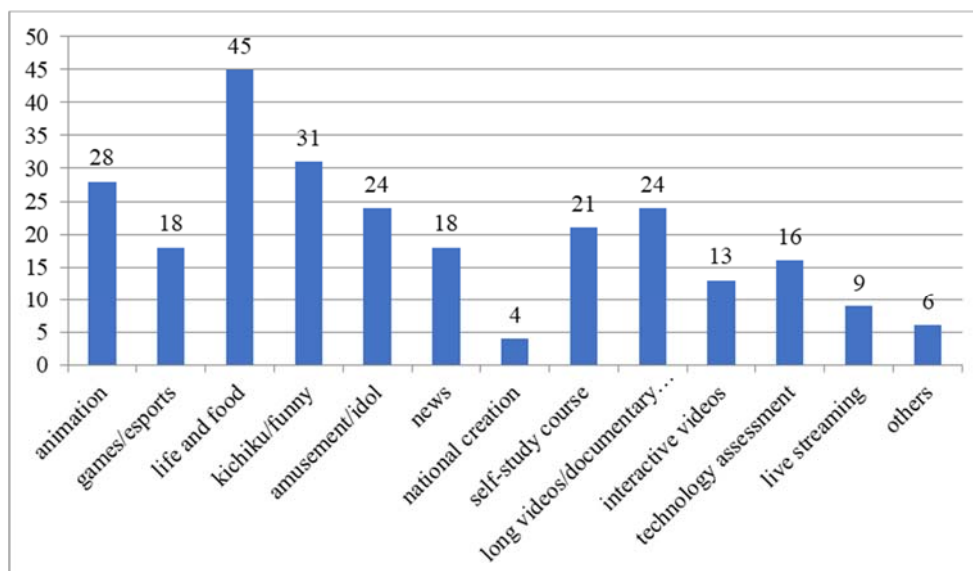


Figure 5. The most frequently concerning content

It is apparent from figure 5 that most people choose to watch the life and food, kichiku, and animation on Bilibili. This is strong evidence that Bilibili is a huge platform developed from the ACG (Animation, Comics, and Games) contents and has the feature of being a cultural community. Further analysis showed that Bilibili has the great potential to expand its contents to diverse aspects like amusement, long videos, documentary films, TV dramas, and self-study courses. It was a significant positive phenomenon due to the increasing number of celebrities like idols, directors, and professors worldwide sharing their life stories and even teaching audience courses for free on Bilibili.

Surprisingly, only a minority of users watch the videos of national creation and interactive videos frequently. We supposed that these are unique and creative sections on Bilibili or even on other platforms that may have lots of audiences. Therefore, we think Bilibili needs to encourage more uploaders to create high-quality videos in these sections to show the beauty of traditional Chinese content and the art of interaction.

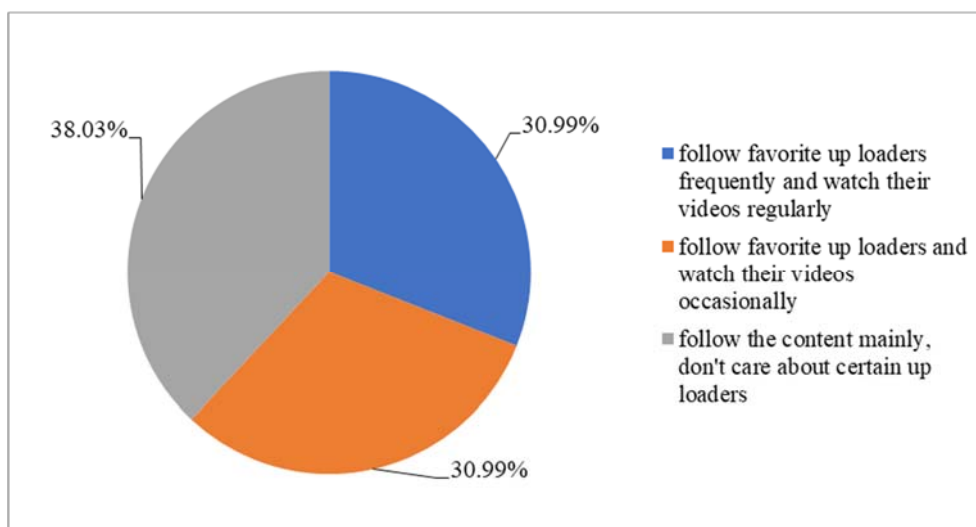


Figure 6. Audience & up loaders

As figure 6 shows, over 60% of audiences follow their favorite uploaders and watch their videos. Further statistical data reveals that over 30% of audiences mainly follow the content and don't care about certain uploaders. These results suggest that Bilibili must maintain plentiful uploaders who can create high-quality original content regularly in their professional area. Also, Bilibili must keep attracting more loaders to create content in diverse areas. In this way, the 30% of audiences that only focus on certain content would stay for the stable excellent videos.

#### 4. Discussion

The results above show the different ages, gender, and preferences in their experience of using Bilibili. Besides, the results also focus on the differences in user experience between users with other characteristics in terms of interaction, functions, and contents of the Bilibili website to summarise the various user experience features. The user experience is the most crucial feature of the media and entertainment enterprises. Bilibili still needs to make innovations and improvements to achieve the best experience for users. The following content discusses the optimization and improvement strategies for Bilibili analyzed based on the interaction, functions, and content.

##### 4.1 Interaction - Enhance interactive video

To achieve optimal user satisfaction, Bilibili can improve user interaction on the platform since Bilibili launched the interactive video function on 8th July 2019. This video method has attracted wide attention from Bilibili users and even the media platform, which means it has huge market potential. In the interactive video to the user to bring a brand new audio-visual experience and

interactive video industry rapid development at the same time, its overemphasis on form, content, and quality is not high, such as the limited viewing platform problem is serious. The interactive videos still need a variety of improvements.

Firstly, Bilibili needs to advance the quality of interactive videos and extend the depth of content. High-quality interactive videos allow users to immerse themselves in characters quickly as they watch the story. As the story progresses, the sense of tension and experience deepens so that the user is more likely to want to continue watching the sub-story in the interactive video. In addition, it can also be summarised and excavated from various hot social phenomena to enhance the depth of the videos. For example, Bilibili uploader “DaNiNi” creates and releases an interactive video “paradise island” on the platform. Through abstract narrative, ways reveal that the “network violence” and “keyboard man” behavior harm society. In the form of an interactive video, let the audience feel this topic further behind the heavy, making the video further spread the core values. Secondly, Bilibili can also accelerate technological innovation and promote the combination of science and technology with interaction. The development of science and technology will catalyze the emergence of new art forms. Interactive video is also the product of science, technology, and new media technology. The long-term and stable development of interactive video is bound to be supported by continuous innovation of technology. Nowadays, the continuous development and innovation of 5G, AI, VR, live broadcasting, and other technologies have provided infinite possibilities for the future development of the interactive video. It is necessary to make full use of the development achievements of science and technology, promote a better combination of science and technology and interactive video, and provide users with a deeper and more real interactive experience [12].

#### **4.2 Function - Promote TV client**

Cloud audio-visual TV is the TV version of the official launch of the Bilibili client. The TV version client has many advantages. For example, there are many foreign legitimate copyright resources, including movies, TV dramas, documentaries, animations, etc. You can also watch the videos made by your favorite Bilibili Uploader on TV. It also has features that other platforms do not have, such as no advertising on this platform, smooth and high definition video (it already has 8K definition), and rich cultural labels. Users can find the corresponding interest circle as a two-dimensional or game explanation. The drawback is that it has not achieved good promotion. There are still too few people using the client. Bilibili can buy the copyright of some well-known film and television works more, or produce some TV series, movies, and programs by itself. To attract users using the TV client and achieve the best user experience.

#### **4.3 Content - Extend user group comprehensiveness**

With the progress of science and technology, more and more middle-aged and older people are proficient in mobile phones. In order not to let the middle-aged and older fall behind the pace of social development. Bilibili can increase some middle-aged and older favorite sections on the original basis. They will pay attention to different content according to their life center. For example, family-centered middle-aged and older people focus on some videos about the family, such as food tutorials and parenting knowledge. Middle-aged and older people who pay attention to self-interest as the center like to browse videos about film and television entertainment and plot with many different contents. Middle-aged and older people who take health as the center like the videos about common medical sense and healthy physical exercise. The elders hope to communicate with the next generation in this new way [13].

## 5. Conclusion

### 5.1 Main findings

The conclusion of the main findings in the results part and the discussion part shows that in terms of interaction, functions, and content, these three options, Bilibili needs to innovate and improve to achieve the best user experience.

Bilibili endeavored the combined issues with high shopper acquisition costs and churn rates due to the rapid development of heterogeneous business models and market sectors in the age of big data. The analysis of user behaviour characteristics to accurately notice different user behavior characteristics and use optimization and development approaches for Bilibili analyzed supported the interaction, functions, and content to boost user a personalized experience.

### 5.2 Limitations and Future studies

The research mainly used primary data and questionnaire surveys. However, there are limitations in the data. The sample size was too small, only 71 people. This work still lacks secondary research. It can collect more data through websites, social networks, newspapers, trade magazines, television, reports, and databases. Further data could be contained in the future. For example, use primary research, including questionnaire focus groups, face-to-face or telephone interviews, marketing for product trials, and secondary research. It will be more accurate to collect data by combining these two methods in future studies.

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