

Research on Related Factors of Fitness Video Popularity

-- Based on the Analysis of Bilibili Video Platform

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Abstract

Fitness videos first emerged in foreign countries. After the continuous development of domestic fitness industry in recent years, they have gained new vitality in the self-media platform. Generally speaking, fitness broadcasters display training actions in video clips and impart training-related knowledge, which in turn stimulates the audience's desire for fitness and enhances the popularity and influence of fitness broadcasters. The audience's interest in fitness videos is mainly affected by the anchor's gender, image, interest, and video content. At the same time, the audience's behavior of rewarding the broadcaster in the video, and the broadcaster's behavior of promoting fitness supplements through personal influence, promoted the emergence of the "fitness economy". This research uses data capture to analyze the content of fitness videos on the N=5000 bilibili bullet screen video platform. The research results show that the popularity of fitness videos is related to personal factors such as the gender and posture of the fitness broadcaster, and has a certain correlation with the season. Research can clearly analyze users' hobbies of fitness videos in the video platform. Based on the fact that bilibili is aimed at young Chinese user groups, the research can more intuitively reflect contemporary young people's thinking about fitness, which has great reference significance for the development of fitness business in China.

Keywords

Fitness video; Video popularity; Bilibili video platform; Content analysis.

1. Introduction

With the breakdown of professional production content and the opening of social scenes, the content of online videos is becoming more and more diversified. As a branch of life video content, fitness videos have gradually entered the daily vision of the public. The so-called fitness video is a form in which the anchor conveys his usual fitness experience and the fitness method he wants to share to the user in the form of a video. The operational characteristics of fitness videos on the bilibili platform are mainly manifested in five aspects: fitness broadcaster, membership system, barrage interaction, website delivery and fitness sales. [1]

In my country, with the continuous rise of fitness culture, new media platforms represented by Weibo and bilibili video platforms all include a large number of fitness videos. The home isolation has directly changed the form and conditions of public participation in physical exercise. "Home fitness" was quickly popularized. [2] As a leading cultural community for young people in China, bilibili video platform is loved by fitness enthusiasts for its highly interactive sharing and secondary creation functions. The huge user base provides a massive content audience for self-media creators represented by fitness videos, which provides a living space for a large number of fitness broadcasters.

In order to make up for the current research vacancies, this research adopts the method of data capture, taking fitness videos on the bilibili video platform as the research object, analyze the

popularity of fitness videos (specifically including the number of videos played, the number of bullets, the number of likes, the number of coins, the number of favorites, the number of reposts, the number of comments, and the number of fans of the broadcaster), personal characteristics of fitness broadcasters (including gender, nationality) and video type (single vs. multiplayer). And explore factors related to fitness video popularity.

2. Experimental

2.1. Study Area

Studies have found that the number of self-media videos played, likes, reposts, comments, and broadcasters' fans are a direct manifestation of the effect of video dissemination, which can be used to describe the popularity of self-media videos and the effect of dissemination. There is a significant positive correlation between related factors. For example, the research of Zhang Yan (2020) [3] pointed out that in the context of short video platforms, the amount of reposting, the amount of comments, and the amount of likes can be used to indicate comprehensive indicators of spreading popularity. And there is a positive correlation between the indicators. At the same time, Cong Ting (2020) [4] used the number of followers and likes of Douyin accounts of publishing organizations in an empirical study on the short videos of publishing organizations' Douyin accounts to reveal the short video dissemination status of different types of publishing organizations. And he proves that there is a significant positive correlation between the number of fans and the number of likes of the work. In addition, Wu Xia (2019) [5] studied the dissemination power of short government videos and their influencing factors. They found that the amount of video playback is highly correlated with the amount of likes, comments, and reposts, and the cumulative number of videos played can be used to measure the performance of government short video accounts. Xu Xiang's (2016) [6] research on Chinese cultural self-media videos on the YouTube platform shows that the number of video likes is a significant factor related to the number of times the video is viewed, the number of likes reflects to a certain extent the audience's recognition of the video, represents the acceptance rate, and reflects the degree of controversy. Therefore, the research hypotheses are as follows:

Assumption 1: There is a positive correlation between the fitness video popularity related variables of the bilibili video platform.

Assumption 2: There is a correlation between the gender of the fitness broadcaster on the bilibili video platform and the popularity of fitness videos.

Assumption 3: There is a correlation between the nationality of the fitness broadcaster of the bilibili video platform and the popularity of fitness videos.

Assumption 4: There is a correlation between the gender and nationality interaction items of fitness video broadcasters on the bilibili video platform and fitness video popularity.

Assumption 5: There is a correlation between the type of fitness videos on the bilibili video platform (single vs. multiplayer) and the popularity of fitness videos.

In summary, this research uses data capture to analyze the number of views, reposts, comments, duration (converted into seconds during data analysis), number of bullets, number of likes, number of coins, and fitness broadcasters' Gender, nationality, video type, and number of fans. And explored the personal characteristics of fitness broadcasters on the bilibili video platform (gender, nationality), video types (single vs. multiplayer), and the correlation between video duration and fitness video popularity.

2.2. Method

2.2.1. Data Collection

This research uses python Pycharm to crawl webpage data and data capture to try to test the factors that affect the popularity of fitness videos on the bilibili video platform. Search on

bilibili.com with keywords of "fitness", "muscle gain and fat loss", "healthy diet", "fitness" and "exercise", and a total of 5000 fitness videos that meet the filter criteria were obtained.

2.2.2. Variable Information

As shown in figure 1, specific variables include: the number of fitness videos played, the number of reposts, the number of comments, and the duration (Converted into seconds during data analysis), the number of barrages, the number of likes, the number of favorites, the number of coins, and the gender, nationality, video type, and number of fans of the fitness video broadcaster.

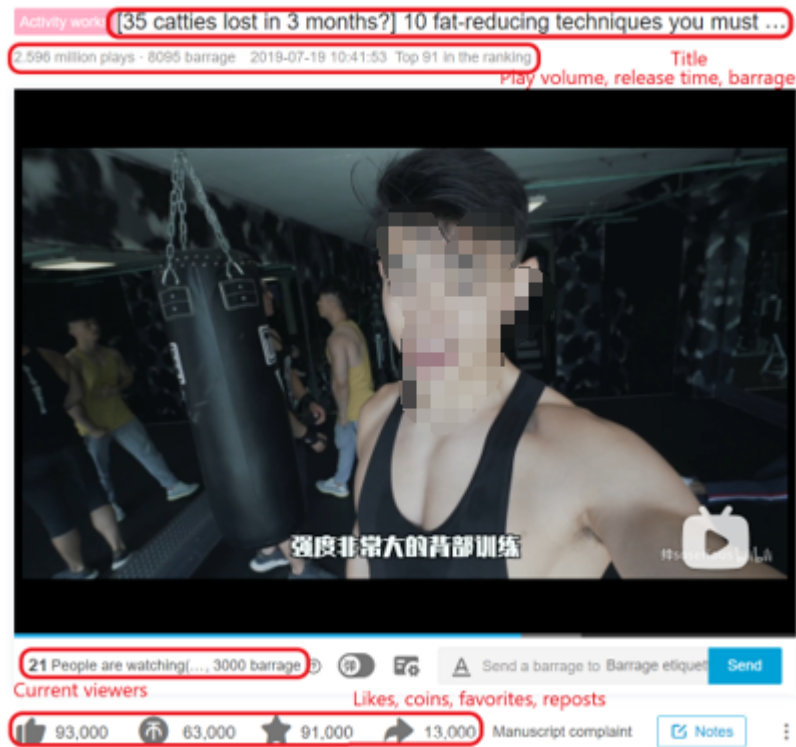


Figure 1. Bilibili video interface

Specifically, in $n = 5000$ fitness videos, $n = 4144$ broadcasters are from China, accounting for 82.9% of the total number of broadcasters, and $n=856$ (17.1%) broadcasters are from other countries (including Japan, South Korea, the United States, etc.); $n = 2968$ (59.3%) fitness broadcasters are males, $n = 1903$ (38.1%) fitness broadcasters are females, $n = 129$ (2.6%) are male and female broadcasters for fitness; among the fitness videos counted in this research, the proportion of single-person fitness videos is more $n = 4871$ (97.4%), and the fitness videos of two or more broadcasters are $n = 129$ (2.6%).

2.2.3. Data Analysis Strategy

This study uses chi-square test to test the correlation between fitness broadcasters' personal characteristics (including gender and nationality) and video types (single vs. multiple). At the same time, the Pearson correlation test is used to explore the correlation between fitness video popularity, fitness video duration and fitness video popularity. In addition, this study also uses the statistical method of one-way analysis of variance to further explore the correlation between video popularity parameters and the gender, nationality and video type of the fitness broadcaster. The data was analyzed using SPSS 26 (IBM Corp, 2019). The significance of all analyses was set as $P < 0.05$.

3. Results and Discussion

3.1. The Gender and Nationality of the Broadcaster

When calculating the correlation between the sex and nationality of broadcasters, this study divides the sex into two groups (female vs. male) and the nationality of the broadcaster into two groups (China vs. other countries). Based on the chi-square test, the results show that the sex of the broadcaster is significantly correlated with his nationality, $\chi^2(1) = 315.30$, $p < .001$, and the correlation coefficient of V is 0.237. Specifically, the research results show that on the bilibili video platform, the proportion of male fitness broadcasters in China is much higher than that of male fitness broadcasters in other countries.

3.2. Broadcaster's Nationality and Video Type

When calculating the correlation between the nationality of the broadcaster and the video type, this study divided the types of fitness videos into two groups (single vs. multiplayer), and the nationality of the broadcaster was divided into two groups (China vs. other countries). Based on the chi-square test, the results show that the nationality of the broadcaster is significantly correlated with the video type, $\chi^2(1) = 14.603$, $p < .001$, and the V correlation coefficient is 0.052. The research results show that regardless of the country, the number of single-person videos on the bilibili video platform is much higher than that of multi-person videos, which is 23.310 times. That is, in the bilibili video platform, the proportion of single-player videos released by China Fitness is much higher than that of single-player videos released by other countries.

3.3. Analysis of Related Factors of Video Popularity

Based on the Pearson correlation coefficient, the research results show that the number of fitness video playback and the number of bullets, the number of likes, the number of coins, the number of favorites, the number of reposts, the number of comments, and the number of fans of the broadcaster show a positive correlation. That is, when the fitness video plays more, correspondingly, the number of bullets, the number of likes, the number of coins, the number of favorites, the number of reposts, the number of comments, and the number of fans of the broadcaster will increase accordingly. This research also found that the duration of fitness videos is positively correlated with the number of fitness videos played, barrage, favorites, and reposts, and negatively correlated with the number of broadcasters' fans. And this research did not find any correlation between it and the number of video likes, coins, and comments. Therefore, the correlation between the duration of the fitness video and the popularity of the fitness video is not significant. In summary, assumption 1 holds.

3.4. Analysis of the Correlation Between the Gender, Nationality and Video Type of Fitness Broadcasters and the Popularity of Fitness Videos

Combined with the above research results, the statistical method of analysis of variance is used to further explore the correlation between video popularity parameters and the gender, nationality and video type of the fitness broadcasters (single vs. multiplayer). Specifically, the research results show that:

1. Based on the analysis of variance, there is a significant correlation between the gender of the fitness broadcaster and the number of videos played, bullets, likes, coins, favorites, forwarding, comments, and fans of the broadcaster. Specifically, when the fitness broadcaster is a male, the numbers of all above are more than those of the female fitness broadcaster. Therefore, Assumption 2 holds.
2. At the same time, there is a significant correlation between the nationality of the fitness broadcaster and the number of videos played, bullet screens, likes, coins, favorites, reposts, comments, and fans of the broadcaster. Specifically, when fitness broadcasters are from China,

their fitness videos have better performance than in other countries. Based on this, hypothesis 3 holds.

3. The research also proves that there is a significant correlation between the types of fitness videos and the number of video broadcasts and barrage. Specifically, when fitness broadcasters publish multiplayer videos, their fitness videos have more views, barrage, and reposts than single-player videos.

4. There is a significant correlation between the interactive items (gender*nationality) of the fitness broadcaster's gender and nationality and the number of fitness videos played. Specifically, compared to watching fitness videos from male broadcasters in other countries, bilibili users prefer to watch fitness videos shot by Chinese male broadcasters. The same is true for women. Compared to watching fitness videos of female broadcasters in other countries, fitness videos of Chinese female broadcasters are more popular. At the same time, when the fitness broadcaster is a female, the difference in video playback volume between fitness broadcasters in China and other countries is relatively small; when the fitness broadcaster is male, there is a relatively large difference in video playback volume between fitness broadcasters in China and fitness broadcasters in other countries. In summary, Chinese male fitness broadcasters play more videos than the other three situations. In summary, assumptions 4 and 5 are both valid.

4. Conclusions

With the continuous development of social media, the content production and dissemination channels have undergone earth-shaking changes. As a form of mass culture and its potential economic benefits, fitness has been widely disseminated and paid attention to. New media platforms represented by Weibo and bilibili video platforms all have gourmet channels in the fitness sector, and their huge user base provides a living space for a large number of fitness broadcasters. The audience's interest in fitness videos is mainly affected by factors such as the anchor's image and interest in the video. The research results show that the larger the number of followers of fitness broadcasters, the larger the number of fitness videos played, bullets, likes, coins, favorites, reposts, and comments. At the same time, the study found that compared with broadcasters in other countries, fitness videos of Chinese broadcasters are more popular, compared with male broadcasters, female broadcasters' fitness videos are more popular with audiences, compared with single-player videos, fitness videos with two or more broadcasters are more attractive. On the whole, compared with other types of fitness videos, these three types of fitness videos produced by Chinese broadcasters, male broadcasters, and multiplayer broadcasters are more popular.

In recent years, with the popularity of social media and the segmentation of content production, the audience for fitness has become larger and larger, the accompanying negative effects (for example, unhealthy fitness concepts, waste of food) have also attracted more and more attention from all sectors of society. Research results show that there is a significant correlation between fitness broadcasters' personal characteristics, video types and fitness video popularity. Therefore, while understanding the current development status of fitness videos in my country and the audience's preference for viewing fitness videos, health communication experts and researchers should widely apply the above research results to further understand, design and produce exercise promotion videos that are more in line with the audience's viewing preferences, and popularize the concept of fitness.

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