

Prediction of Electric Load Neural Network Prediction Model for Big Data

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Abstract. As Tik Tok became popular, short videos have become a new entertainment industry trend. This paper analyzes why Tik Tok succeeded and the problems it faces, which can give followers a guideline of this industry. This paper used secondary data analysis and comparative analysis to analyze and discuss the problem. According to the analysis, There are too many advertisements on Tik Tok. The information is too fragmented, misleading the consumers and letting them lose interest in Tik Tok. Besides, the worldwide coverage of Tik Tok is far from enough. After the analysis, Tik Tok is not only an entertainment platform but also a learning platform from which people can learn knowledge from all kinds of fields. Subsequent practitioners of the entertainment industry can learn the process that the industry must go through and prevent problems from the example of Tik Tok in this article.

Keywords: Post-epidemic era, Bytedance, Current situation, Optimization countermeasures

1. Introduction

1.1 Research background

Since Bytedance launched Tik Tok in September 2016, short videos have led to a trend in the entertainment industry in China and even worldwide. With the eruption of COVID-19 in 2019, Tik Tok caught the opportunity to reach its peak usage rate in late 2020 (see Figure 1). The nearly 90% usage rate means Tik Tok has become the bottom demand of users in the current Internet environment in China. This must thank its unique artificial intelligence algorithm system. The algorithm created by ByteDance can precisely locate customers, analyze their preferences and push corresponding information and content to users based on the results. Therefore, as long as people of every age learn to use mobile phones, they can get the information they want from the Bytedance series of products. In recent years, the explosion of Tik Tok has changed the pattern of traditional business, and some new business models have emerged. One of the most successful ones is the sale of goods through key opinion leaders' live videos based on the channel TikTok. This model will become mainstream in the post-epidemic era instead of traditional offline shopping.

Meanwhile, the huge customer base will undoubtedly bring many dividends to businesses cooperating with Tik Tok. Although Tik Tik has a very high market share in China, it often bricks a wall in its overseas development and hardly makes breakthrough progress. It's not competitive with overseas products like Instagram and YouTube. Through the current development of Tik Tok and ByteDance, this paper will analyze the problems the company faces and give a forecast for further development, which can give some guidance to those who want to invest in the we-media industry. In addition, the issue of Bytedance itself will be raised in the article, which is not just about one company but about an entire industry. This topic can help the industry to understand the problem in advance and prepare countermeasures to the problem in advance.

1.2 Literature review

Liu and Li found that Tik Tok has gained many users through precise product positioning and low entry threshold. Then the participation of some stars and the promotion online and offline have made Tik Tok's attention rise. Still, the homogenization and vulgarization of content have become the main problems. According to their research, combining the algorithm and human check can ensure the quality of content, which is the tool to win [1]. Another report, made by Li, found that Tik Tok analyzed customers' needs through the theory of "use and satisfaction" and optimized and innovated interactive effects to enrich user experience.

On the other hand, the team of Tik Tok is very good at exploring the potential of the product market. It strengthens the communication effect by taking advantage of young people's quick acceptance of new things [2]. Yang and Hou proposed that Bytedance's series of products combine content and user system and cash the flow with products. The core competitiveness of using artificial intelligence to create "flow + data" through "algorithm + content" has become the world's most valuable unicorn enterprise in 2019, surpassing Uber with a valuation of \$75 billion [3].

1.3 Research gap

Most scholars and articles mainly studied how Bytedance and its most popular product Tik Tok achieved success step by step, including its great algorithm and powerful market team. However, few articles studied the development and challenges of Tik Tok's we-media industry in the post-epidemic era. Under the impact of COVID-19, the global entertainment industry has undergone great changes. Although Tik Tok has established a complete commercial system, there are still many gaps between Tik Tok and similar apps. In addition, the information provided by Tik Tok to individuals is too fragmented, and the information received by individuals is the same kind. Tik Tok has dominated the Chinese market in recent years, but its overseas coverage is far from enough.

1.4 Research framework

First of all, this paper will analyze the characteristics and psychology of Tik Tok's users and compare their competitors' products through data analysis. Secondly, it discusses the issues related to the advertisement on Tik Tok and the "information cocoon room", which is about distributing fragmented information and frequently repeated information. Finally, we will compare the coverage of Bytedance products in China and abroad through some big data information.

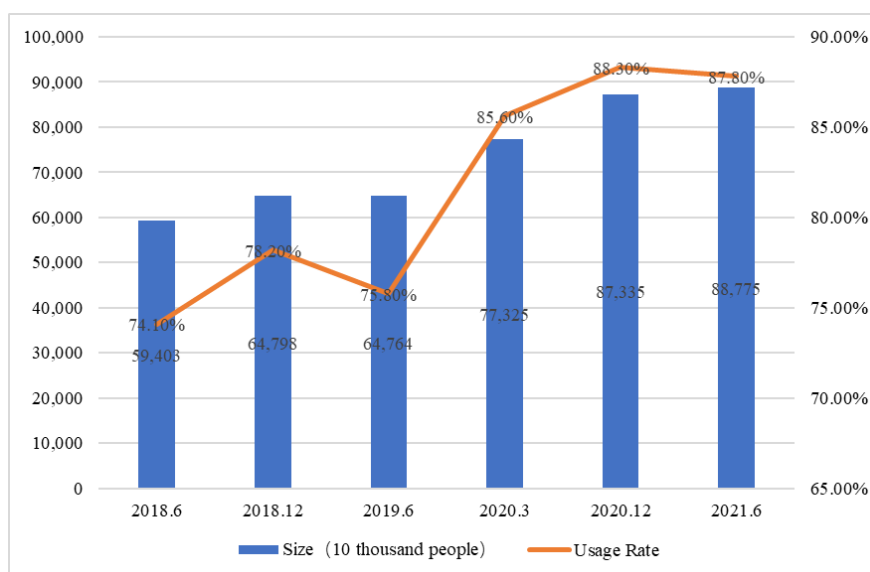


Figure 1. Size and usage of short video users (June 2018-June 2021) (Source: 44th - 48th Statistical Report on Internet Development in China)

2. Methods

Many research approaches are discussed in the study, including surveying, interviewing, and reviewing relevant literature. Both secondary data analysis and comparative analysis are methods of analyzing information from other sources. Secondary data analysis is when a researcher uses information gathered by others for their purposes, i.e., the researcher uses secondary data to answer or analyze another topic posed by another researcher. Essentially, the comparative analysis examines two items, identifying the similarities and differences between them, i.e., the data from two separate items are compared to form conclusions about them.

2.1 Secondary data analysis

This paper will examine the impact of the epidemic on people after 2020. After the outbreak, this paper will explore how their habits have changed due to the epidemic and how these changes reflect the future advantages of ByteDance. And the conclusion, post-epidemic life patterns and the use of the Internet by the general public.

2.2 Comparative analysis

Additionally, a comparative analysis will be utilized to evaluate the strengths of ByteDance in comparison to its competitors, i.e., to compare ByteDance's product, TikTok, with ByteDance's competitors, such as Youtube, Instagram, and other social media platforms. This paper will compare the number of downloads, users, and average duration of use of TikTok with those of its competitors to highlight the advantages of ByteDance in the future and conclude that ByteDance will be the dominant player in the future. After that, Secondary Data Analysis will be performed to demonstrate the benefits of ByteDance's TikTok. The third section of the analysis will highlight the potential strength of ByteDance in the future by examining reports on the characteristics of TikTok users and why they use TikTok in the first place.

3. Result

3.1 The current situation of TikTok

Internet industries such as social media, which have risen in popularity due to the rapid growth of the Internet and the current outbreak and increasing severity of the epidemic, are promising and have the potential to become highly developed in the future. Before the epidemic, people spent relatively little time at home, which translates to less time online; however, the epidemic has altered the lifestyles of many people, particularly the younger generation. For example, more people choose to telecommute from home, thereby reducing social contact to prevent the spread of the virus among colleagues. These changes in people due to the virus indicate a trend in which more people choose to stay at home rather than go out socially as often as they previously did. This also means that people are spending more time on their phones or the Internet, as they require it to complete their work or stay connected and expand their social life with their friends. According to the study's findings, 90 percent of adults believe that the Internet is extremely important to their lives, and people communicate with others via video calls. In addition, 29% of broadband users are interested in upgrading their service provider [4]. These data indicate that the Internet and social media are becoming increasingly important in people's lives due to the epidemic's impact and technological growth. Consequently, following the epidemic, people have a greater proclivity to spend more time at home, and when they are at home, they spend a significant amount of time on the Internet. This also suggests that, following the epidemic, people will spend an increasing amount of time on social media or anything connected to the Internet. Among young people, this is especially evident, as many students or young workers are spending more time at home studying or working, which means they will be spending more time on the Internet as a result. Furthermore, social media apps such as TikTok are primarily used by young people. According to the data, users between the ages of 10 and 30

account for approximately 50% of all TikTok users, implying that most TikTok users have been most adversely affected by the epidemic [5]. With users spending an increasing amount of time on social media platforms, TikTok has a distinct advantage in this environment. For example, data show that as of April 2022, TikTok's monthly users have surpassed 1 billion, surpassing Snapchat and Twitter. The trend of monthly active user growth continues to be observed. Although TikTok continues to attract younger users, the app is also gradually making its way into the lives of older people, who are increasingly joining the platform. For example, most dance video creators on TikTok are over 60 [5]. Furthermore, it has significantly outperformed its competitors in terms of average screen time per user since 2018. The average amount of time spent per user on TikTok is 25.7 hours as of 2021, compared to 16 and 7.9 hours for competitors like Facebook and Instagram. Most TikTok's users and its competitors have seen their lives change due to the epidemic, giving them more time to spend on the Internet and social media platforms like Facebook. Furthermore, most TikTok users choose the platform because they believe it is authentic. That is, users of TikTok believe that they can be themselves on the app without being judged. According to the study's findings, 64 percent of users believe they can be themselves on TikTok, and 56 percent believe they can post videos that they would not otherwise post anywhere else. The majority of users (59 percent) report that they have a sense of belonging when using TikTok. 77 percent report that TikTok is a place where they can express themselves publicly. 70 percent report that TikTok will show their videos to others, and 79 percent report that the videos and content on TikTok are unique [6]. So most TikTok users share a unique characteristic: they can be themselves on TikTok and post the videos they want to post. They are interested in discovering new things on TikTok and watching videos that they can't find anywhere else. They want to be themselves on TikTok and see videos they can't find anywhere else. In other words, they are looking for a way to distinguish themselves from the crowd.

3.2 Marketing Problem identification

First of all, too much advertising input will give users the illusion that an item is worth buying, and then see many people are buying, they will follow the trend of buying goods that are not worth buying at all. These advertisements are not lacking in false advertising will lead to users losing trust in e-commerce and life. Some users may upload inaccurate news on the platform, leading users to listen to rumors and thus spread the news. At the same time, the increase in the number of ads will lead to a reduction in the number of truly meaningful videos, and users will lose interest.

Secondly, short videos are short and numerous so that users can understand and read much information through them. Still, they do not have deep understanding and memory, so watching short videos can bring freshness and excitement but not let users understand the information.

On the other hand, the platform will only recommend videos according to users' preferences so that users will be habitually guided by their interests. All the videos they come across are their interests and not all-around information, which is called an "information cocoon", which leads users to be closed in their world and thus escape from reality and have no access to other types of information. This leads to users being closed to their world, thus escaping from reality and not having access to other types of information. It also poses certain security risks. The user's short videos can be used to learn about the user's preferences, leading to fraud and other criminal acts.

4. Discussion

4.1 Problem

4.1.1 Blindly following the trend and video quality issues

On the one hand, merchants use their accounts to upload advertisements, and on the other hand, they also cooperate with many bloggers to shoot promotional videos[7]. Hence, users are not only unable to distinguish the authenticity of the information but also are constantly swiped to such videos and thus guided to buy such goods. The proposed improvement strategy is for the platform to verify

the information in advance to exclude false information and rumors, shield the false news released by non-professional users, and impose appropriate penalties on those who spread rumors. In addition, the quality of platform products will be tested, and the number of advertisements placed by merchants will be strictly controlled to avoid recommending continuous advertisements of uniform products to users through accurate algorithms. In addition, set up the live stream and advertising area, separate advertising and live stream and live video, to meet the needs of users shopping and improve the experience of using.

4.1.2 Information Fragmentation

The nature of information is information fragmentation[8]. People learn to read much information through online media but do not have a deep understanding and memory[9], so it cannot be avoided. For short video platforms, the duration of short videos can be extended. For example, from fifteen seconds to half a minute, most of the content is as complete as possible. If the video is too long, you can add a multi-speed function so that users can understand all the information in the shortest possible time.

4.1.3 Information Cocoon and Security Hazards

Information cocoon refers to how their interests habitually guide people's information field, thus shackling their lives in a cocoon[10]. Through questionnaires to understand users' hobbies more comprehensively, not limited to considering only the content that users are interested in, it can regularly push some fields that users are not involved in or important news. So TikTok is not only a short video platform but also a platform that allows users to learn knowledge. Since the videos are recommended based on users' interests, each user's hobbies can be shown through the recommended short videos. Therefore, users' preferences can be easily leaked, so it should be mandatory for each user to take real name authentication before using the app for the first time and regularly promote videos about cyber security. In addition, the comment section of the video often shows some unfriendly remarks, and the platform should strictly control and delete the remarks in time to create a good network environment.

4.2 Optimization measure

4.2.1 Strengthen content supervision

From the perspective of enterprises, to achieve healthy dissemination of content on the TikTok platform, it is necessary to strengthen the audit of video content. In addition to strengthening the screening mechanism of content review and improving the technical level of intelligent screening and other hardware requirements, efforts can also be made in the following aspects. Use the platform's existing network of celebrities, stars, opinion leaders, and other resources to promote green and healthy information content concepts. Vigorously crack down on pornographic and vulgar content, strengthen the control of video uploading, raise the threshold of video uploading, and control the spread of bad information from the source. Design healthy browsing mode, control use time and screen browsing content, and prevent excessive addiction to entertainment.

From the perspective of government agencies, relevant laws and regulations should be issued for the social entertainment information sector in the new media era to establish certain legal standards for information dissemination. Publicity departments should also keep pace with The Times and do good publicity on digital platforms to help enterprises establish a healthy and good information dissemination environment.

From the user's point of view, as a member of the online community, it is necessary to strengthen the construction of their moral consciousness, constantly and consciously increasing the aesthetic taste away from vulgar content. Make proper use of the short video platform to enrich fragmentation time and actively learn and receive new knowledge.

4.3 Increase incentive mechanism to encourage innovation

In order to have continuous innovation, it is necessary to establish a certain reward and punishment mechanism to stimulate the artistic creation of many excellent original artists. The platform can create activities to select original content for different periods, such as monthly and annual, and reward video authors. At the same time, we will severely crack down on illegal dissemination and misappropriation of original works, protect the rights of original authors and safeguard their creative enthusiasm. In short, improve the public aesthetic level, reduce content homogeneity, promote innovation, realize the two-way unification of platform value and user's value, and jointly maintain a good information communication environment.

4.4 Accelerate the commercialization process and explore and innovate profit models

If an enterprise wants to start a new business and maintain a leading position in the industry, it must first solve a single profit model. It can combine the characteristics of short videos with advertisers to produce original video ads on the TikTok platform. Make marketing plans created by users and collect original works combined with advertising themes. At the same time, global business lines should be united to exchange resources, increase resource integration and business crossover, and expand the scope of marketing positions. Increase cooperation with Taobao, Jingdong, and other e-commerce platforms to promote the development of e-commerce on the TikTok platform.

5. Conclusion

5.1 Key finding

In the age of the epidemic, people's lifestyles have changed. More time spent online means more time spent on cell phones and other electronics, especially among young people. Young people are the most affected by the epidemic, and TikTok has more active users and spends more time per user than its competitors. At the same time, TikTok is also attracting older users. People choose TikTok because of its authenticity and because they can be themselves on TikTok and distinguish themselves from the crowd. In response, this paper presents three current marketing problems. First, too many advertisements result in fewer meaningful videos to follow blindly. Second, short videos fragment information; and third, users are exposed to videos that are too one-sided and have the security risk of privacy leakage. The proposed solutions are: reduce false advertisements, delete inappropriate comments promptly, sing video time and provide a multiplier function, regular questionnaires to understand users' preferences in all aspects, regularly recommend online safety videos, and strictly enforce real-name authentication.

5.2 Research significance

The solution proposed in this paper can improve the competitiveness of TikTok with similar products overseas, which can further develop the international market and increase user stickiness, solve the possible security problems, and thus increase users' trust. At the same time, reducing false advertisements and bad information can also promote the development of the short video industry so that more users choose to get information through short videos. Conclusion: Making the e-commerce industry better, helping the industry understand the problems and prepare countermeasures.

5.3 Limitation

This paper mainly used secondary data and lacked the use of primary data. In the future, primary data can be obtained through questionnaires and interviews with users of different age groups.

References

- [1] Liu Xia, Li Xiaoye. Research on marketing promotion strategy of Douyin short video [J]. Guide to News Research, 2018, 9(5):2.
- [2] Li Huiying. Research on communication dependence of Douyin APP [J]. China Newspaper, 2018(2):2.
- [3] Yang Xing, Hou Xue. How Bytedance became the world's most valuable unicorn [J]. Science and Technology China, 2019(9):2.
- [4] COLLEEN MCCLAIN, EMILY A. VOGELS, ANDREW PERRIN, STELLA SECHOPOULOS AND LEE RAINIE. Pew Research Center. (2022, April 28). The Internet and the pandemic. Pew Research Center: Internet, Science & Tech. Retrieved May 7, 2022, from <https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/>
- [5] Brandon Doyle. TikTok Statistics - Everything You Need to Know [Apr 2022 Update]. Wallaroo Media. April 21, 2022. <https://wallaroomedia.com/blog/social-media/tiktok-statistics/>
- [6] Matt G. Southern October 23, 2021 4 min read S. E. J. S. T. A. F. F. M. G. S. (2021, October 24). Why is TikTok so popular? Search Engine Journal. Retrieved May 20, 2022, from <https://www.searchenginejournal.com/why-is-tiktok-so-popular/424603/#close>
- [7] 5 factors affecting the continued release of Jitterbug's huge 1,000-chuan advertising program (2021 July 1) Retrieved May 21, 2022, from <https://zhuanlan.zhihu.com/p/385579022>
- [8] The Age of Information Fragmentation. Retrieved May 21, 2022, from <https://baike.sogou.com/v63297114.htm?fromTitle=The Age of Information Fragmentation&ch=frombaikevr>
- [9] Advantages and disadvantages of information fragmentation. Retrieved May 21, 2022, from <https://zhidao.baidu.com/question/1183253915959388859>
- [10] What is Information Cocoon? Retrieved May 21, 2022, from [https://wiki.mbalib.com/wiki/Information Cocoons](https://wiki.mbalib.com/wiki/Information_Cocoons)