

The Development and Changes of the Relationship between Video Recommendation Platforms and Audiences in the Era of Algorithms

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Abstract— The continuous improvement of technology provides a strong technical backing for our online video developments. Under the new media environment, online videos are developing rapidly and a large number are being uploaded every day. With the emergence of smartphones, applications using user side recommendation algorithms have become important platforms for users in our country to obtain information, seek entertainment, and socialize. Its usage and social impact have attracted social and academic attention. In recent years, short online videos have swept all major online platforms. As an emerging mode of communication, short videos have gained more and more audiences with their unique advantages. The trend of creating and watching short videos is on the rise. Short video applications are seeing explosive growth and have gradually become a new source for the public to obtain information and find entertainment. In the context of this algorithm recommendation, this article will explore the relationship between short video platform and its audience. Based on the evolution of its development, the article will discover the core elements of the relationships between audience and the video platform and the effect of the short video platform with recommendation algorithm on the audience. Subsequently, the article will discover the negative impact of the algorithm mechanism on the audience and attempt to correct the drawback in time.

Keywords— Algorithms; Video recommendation platforms; The relationship of audiences; The development thinking.

I. EVOLUTION OF VIDEO PLATFORMS AND AUDIENCE RELATIONSHIPS

(1) The rise of video platform era: audiences looking for short videos

The development of online videos follows the pace of the Internet development. The history of Chinese online video development almost overlaps with the history of Chinese Internet development. At present, most domestic scholars of online video research began in 2005; most take the appearance of various impersonation videos as a symbolic event and study the development trend of online video after 2010. The concept of Web 2.0 was introduced in 2004, and by 2005, it has been deeply rooted in the hearts of the people. Unlike Web 1.0, which is primarily generated by a website, Web 2.0 is a user-led Internet model for generating website content. Net users are not only users of web content, but also producers of content. The most prominent feature of the Internet in the 2.0 era is the sharing and aggregation of information. Internet companies mainly provide services and platforms and focus

more on interaction and activity of users. This model changed the functionality of early community-based websites, while also changing video-centric sites and the boom of short videos.

The functional changes related to the community website and original videos are mainly reflected in two aspects. On the one hand, functional integration, such as the launch of Baidu Tieba in December 2003 begins a new model of combining search engines and communities [1]. Users can publish information including video communications on its platform; on the other hand, web portals are gradually splitting into interactive audio and video channels, such as Sina Podcast, launched in 2006, and Sohu Podcast launched by Sohu.com.

They are all based on the interactive platform for original content exchange. On the one hand, podcasts allow you to create and upload your audio and video content. On the other hand, podcasts allow sharing of other users' viewing, audio, and video information. At this time, the audience began to find and browse their favorite content on the video websites.

When the development of video sites started, they were divided into two categories: one was based on video sharing and the other was mainly for acquiring the copyrights of film and television dramas. In 2005, the United States' largest video sharing site YouTube was launched. This video sharing model has taken the world by storm, affecting the development and evolution of the Chinese Internet industry. Tudou launched in April 2005 and Youku launched in June 2006. Both of their main functions are video sharing. The most representative and attractive video content in the early days mainly came from net users and partly from content providers and websites. Similar video sites that appeared during this period included 56.com (also known as Wo Le Net), which went online in April 2005, and 6.cn, which went online in 2006. Video websites that mainly purchase the copyrights of film and television dramas include UUSEE.com and PPTV, which were launched in 2005, and LeTV, which opened a live broadcast platform in 2006. These video sites all provide search functions to enable users to find different videos according to their preferences.

(2) Video website boom: relying on quality content to attract audiences

In this period, the development of online video can be characterized with opportunities and challenges. It's the beginning of the 3G and mobile phone video era. On December 31, 2008, the State Council adopted a resolution to start the 3G licensing process. Based on 3G communication technologies and the application of terminal devices, PC users began to migrate to mobile terminals and internet video triggered the era of mobile internet. The challenge is that with the advent of several major stumbling blocks in 2008, the video industry experienced several downturns after entering the economic adjustment period. One factor is the implementation of restrictive policies. The Provisions on the Administration of Internet Video and Audio Programming Services, which began in January 2008, not only put forth a number of requirements for the production and dissemination of video contents on the Internet but also strengthened the copyright protection of film and television contents. It also raised the qualification requirements for Internet platforms that provide audio and video services. Second, when the global financial crisis erupted, capital markets cooled down and the investments in the video industry became more rational. Finally, after several years of "barbaric" development, the development of the video industry itself gradually entered a bottleneck period and the superimposed effect of multiple factors began to appear in 2009. People's expectations for private video sites fell to a freezing point. The video website industry entered a period of violent turbulence and adjustment and differentiation. Competition among websites intensified. Mergers, adjustments, and optimization of business strategies and transformation became the keywords of major video websites during this period.

With the advent of the video era, a large number of Internet audiences have poured in. The supply of video content on the website is in short supply, prompting the website to speed up the self-production of video content. Various forms of network original programs continue to appear on video sites, such as network variety shows, network short dramas, micro-movies, etc.; typical websites in the field of video selfies include Tudou, iQiyi, and Youku. In May 2010, Tudou.com announced the launch of the "Orange Box" self-made drama project and the "Warehouse No. 6" Chinese talent reserve project, which means that professional video websites have officially opened the prelude to the production of film and television content [2]. In the same year, Youku, Sina, iQIYI video sites also launched their own content plans. IQIYI was officially launched in April 2010. It announced the building of China's first HD TV portal. In May 2011, IQIYI began to cast a large homemade variety show. In June of the same year, IQIYI released the "Qi Yi production" strategy to establish the industry standard for self-made internet videos.. Within a few months, the original video shows in various forms, such as the Health Variety Show "Horror! Health Alert, online series "Love", Variety show "Love GO", "City Mapping" series of micro-movies, etc. In April 2010, Youku released "Youku produced" strategy, to build a movie and television production distribution system with Internet video features. In June 2010, Youku and China Film Group Corporation, Chevrolet Cruze jointly launched the "11 degree

youth" film program, creating a "new media movie" model. One of the series "Old boy ", set off an on-demand frenzy and became one of the major Internet events of the year. In March 2012, Youku launched the annual homemade large-scale reality show "I am a legend". It is the first to open a variety show on a video website. At the same time, it also launched the first Internet full interactive talk show "Xiao said".

(3) The age of algorithms: video recommendation platforms promote contents to audiences

In December 2013, the Ministry of Industry and Information Technology officially issued a 4G license. This declared the beginning of 4G era in China. 4G systems greatly improve the speed of mobile networks and allow users to conduct wireless business. With the rapid development of mobile applications, the video industry, which requires high network bandwidth, has ushered in unprecedented development opportunities.

In addition to watching video content, algorithmic short video platforms have emerged, which use algorithmic mechanisms to identify audiences' preferences and personalize their push notifications. Short video platforms with algorithmic push mechanisms such as TikTok, Kwai, xigua.com, etc. have are a few of the examples.

With the development of technology, we are now in the stage of moving towards 5G. Mobile terminals are popularized and the development of online video is also in a state of overlapping development. TikTok, Kwai, Volcano video, watermelon video and other algorithmic short video platforms enjoy the dividend brought by the 4G technology. Two years have witnessed a spurt of development, and live video broadcasting is in the ascendant. The development of online video applications allows audiences to experience it firsthand. The algorithmic mechanism brings about a personalized push mode of dissemination and therefore changes the way the audience receives information.

II. CONTENT: CORE ELEMENTS THAT CONNECT AUDIENCES TO VIDEO PLATFORMS

(1) Content is the core element of the audience's association with the video platform

Based on the above three stages of video platform development, it can be seen that video content is the core element that why the audience chooses a video platform. The reason why audiences associate with various types of video platforms is to seek their favorite video content.

First of all, in the era of the rise of video sites in the first stage, video sites focusing on video sharing began to develop. The launch of YouTube, the largest video-sharing website in the United States, affected the development of domestic video sites, such as Tudou and Youku, which were subsequently launched, and their main functions were also video sharing. These video sites all provide search engines, and users can start searching for different videos according to their preferences.

Secondly, during the prosperous period of video websites, the competitive landscape of video websites has undergone multiple rounds of integration, forming several dominant

market structures. IQiyi, Youku Tudou, Tencent Video, etc. have become "giants". With the advent of the video era, a large number of Internet audiences have poured in, and the supply of video content on the website is in short supply, prompting the website to speed up the self-production of video content. The launch of professional self-made content is to attract more viewers and compete for the attention of the audience.

Finally, at the stage of the algorithmic era, with the popularization of smartphones, which is the most accompanying terminal, the number of users using mobile phones to watch video shows is increasing year by year. A quick, easy, stress-free, and more acceptable algorithm short video APP was born to fill up the fragmented time in users' lives under high pressure and fast pace. As an investment hype in the era, the short video industry has attracted a large influx of capital. The influx of capital has also accelerated the speed of updating in the short video business. Short video sites have shifted from traffic is king to content is king. Its algorithm brings a personalized push mode of communication, which is closer to the preferences of users and helps to attract more audiences to its platform.

(2) The different operating models of video platforms reflect the different relationships between audiences and content

The change in the operating mode of the video platform also means a change in the way the audience connects with the video content. According to the above three stages of video platform development, it can be found that the operating mode of the video platform has changed a lot with time.

First of all, in the era of the rise of video sites in the first stage, the functional changes of original video-related community sites are mainly reflected in two aspects. On the one hand, it is functional integration. For example, Baidu Tieba, launched in 2003, created a new model of combining search engines and communities [3]. Users can freely publish information including videos on the platform. On the other hand, portal websites have gradually differentiated into interactive audio-visual channels, which are interactive platforms with original content exchange as the core. On the one hand, podcasters can create and upload their own audio and video content, and on the other hand, they can also watch and share other users' audio and video. Tudou and Youku mainly provide video sharing services. In the early stage, the most representative and attractive video content mainly comes from the self-made content of net users and partly from the self-made content of content providers and websites. Video websites that mainly buy the copyrights of movies and TV series include STV, PPTV, and LeTV, which has a live broadcast platform.

Secondly, during the prosperous period of video websites, videos such as online variety shows, online skits, and micro-film series appeared on video websites. Typical websites for self-made videos include Tudou, iQiyi, Youku, etc. In the traditional media era, video websites lack the audience, and the audience has the habit of viewing TV. Then, focusing on various video websites, a large number of movie resources are introduced into video websites, and there is a steady stream of

professional video websites. Although traditional media audiences started early, representative websites such as Youku, bilibili, AcFun, and other different types of self-made film and television programs continue to refresh their broadcast volume and also form social topics. As a result, they attracted the attention of a large number of viewers, especially young viewers. Many viewers gradually abandon the original habit of watching movies and television programs and change from traditional media to new online media.

Finally, in the era of the algorithm, 4G network technology makes the operation of mobile terminals simple, and the development and application of various smartphone APPs also provide a powerful editor to further reduce the threshold of video production and the development of personalized original micro-videos. Since Internet communication entered the media era, the media is becoming the largest original source of communication [4]. Media platforms such as WeChat Official Account, Sina Weibo, Toutiao.com, etc. have contributed to the development of the Internet since the spread of original micro-videos. The planning and production models of these micro-video content platforms make online video the norm. At the same time, short video platforms such as TikTok, Kwai, and ixigua.com with algorithmic technology and social attributes have also emerged. At present, the outlook of the short video industry is in good condition. Algorithmic short video platforms enjoy the dividends brought by 4G technology and have shown a spurt of development in the past two years.

III. THE EFFECT OF SHORT VIDEO PLATFORMS WITH RECOMMENDATION ALGORITHM FOR AUDIENCES

(1) "Uses and Gratifications" Audience Psychology

The "Uses and Gratifications" theory originated in the 1940s. It's a study of the propagation process from the viewpoint of the audience. According to this theory, the audience contacts the media from their own perspective, hoping to meet their needs through media information. After reaching the media, the audience gets the impression of gratifications in their brains, thus forming an impression of the media, and then determining the next media contact behavior accordingly. The practical significance of this theory in today's world is that the audience does not have to passively accept information from the mass media as before. With the development of the Internet, the original communication environment has changed, and the audience's choice of media has become more active and diversified. From the traditional media audience's use of media information to the new media era, the audience's use of media information is combined with the use of the media itself. In the new media era, audiences can actively obtain and extract the information they want through the Internet. Through acquisition and reading, the audience can observe or use the information to satisfy their desires and obtain spiritual satisfaction. On the algorithmic media platform, the rise of demarcation reading and personalized reading makes the "Uses and Gratifications" theory more meaningful.

(2) Intoxicating satisfaction of content

Currently, the "Personalized Recommendation Algorithm" for short video applications recommends content of interest to each audience based on basic logic of crowd division. Short video platforms recommend content to audiences based on their behavior on the platform. This algorithm can indulge users with personalized push. The function can help platforms in the initial stage accumulate a large user base. As the platform expands, using this algorithmic push model will enable users to pay more attention to the content they want to accept and be interested in, resulting in the audience's intoxicating satisfaction with the content.

(3) The need for social belonging

In recent years, the communication tools people use for social interaction are mainly Weibo, WeChat, and Tencent QQ. Daily communication and contact are relatively static. The emergence of short online videos has enriched the dynamic display of social apps. After recording and publishing a short video, users can also share the short video to WeChat Moments, Weibo Daily, and QQ Zone by one-click forwarding and sharing. At the same time, if the short video is praised by the viewer during the transmission, the viewer can also give a thumbs up, comment, and forward it to their audio channel. Recommendations from friends also appeared in Douban. Users can recommend people that other users may know based on their address book, location, city, etc. It allows them to carry out their new daily life in a static social network. In addition, Douban has also set up Douban Assistant, which uses a large number of BBBs to promote short videos on the platform every day for more users to see. Using this function, the social network between users will continue to expand to meet their artistic needs and better show themselves. The background of Douban will accordingly promote the interest of each user, allowing users to have a deeper understanding of the content they are interested in.

IV. ALGORITHMS: "INTERVENERS" IN AUDIENCE-CONTENT RELATIONSHIPS

(1) Analytical Reflection on Effects

Algorithmic pushed media platforms to a certain extent meet the audience's personalized reading and viewing needs, and the audience receives the information they like. However, there are some shortcomings. From the viewpoint of audience psychology, algorithmic media platforms should also consider the impact of the platform's algorithmic mechanisms on how the audience gets information and how the information is obtained, so that the algorithm mechanism is properly optimized and tuning.

With the development of algorithm platforms, relying too much on push mode algorithms can make users focus more and more on the content they want to accept. Preferential content will appear to have limitations in dissemination over time, and finally enter the "Information Cocoons" proposed by Sunstein (Sunstein, 2006). There is a phenomenon of bad money drives out good money. At the same time, the content is becoming more and more entertaining and condescending to

user experience. However, there are many users who want to use their limited and fragmented time to obtain high-quality information, rather than simply impersonation and low-standard videos.

The continuous development of multimedia networking technology has given everyone a chance to present themselves on the web platform. Everyone can be the subject of information dissemination. The low cost of short videos make it easy to spread faster. A large number of short videos on the short video platforms make it difficult to identify bad videos in both positive and negative aspects in a short period of time. This has led to various vulgar "vulgar, vulgar, vulgar" short videos. In order to attract attention and become famous overnight, many Internet users often upload vulgar or even disgusting videos, polluting the Internet short video environment. In addition, some even make fun of passersby in order to shoot videos and even disrupt public order and molest the police. These short videos, both good and bad, flood cyberspace, interfere with audiovisual and convey negative energy. Comments on online short video platforms often see net users complaining, and some even trigger online violence. This is also an inevitable problem with the social functions of short video platforms.

(2) Algorithms influence audience viewing by organizing content

First, algorithms deliver personalized content to audiences based on personalized push, and engage audiences by organizing and delivering content to audiences. Intelligent algorithms recommend matching content and traits. In fact, it suggests information based on what users read and establishes model audience reading preferences. For content data that has been analyzed, you can use algorithmic models to tag content and recommend it to users who might like it. User feedback can be used to verify that the model is recommended to the right audience. For graphical information, if the content tag matches the audience's reading preferences, the graphic information is pushed to the user; otherwise it is not pushed to the user. In addition, user behavior leads to more relevant content production. For example, if users prefer to read articles related to health, the machine learning of this behavior automatically generates a large number of related articles and gives priority to promoting health-related articles published from the media.

Second, algorithmic platforms no longer produce content on their own, but aggregate content from different producers. Unlike traditional video sites, the centrality of audiences is increasingly prominent. With the vast ocean of information and rich and diverse media, the public continuously collects and publishes information on the vast network of real life. Smartphones and other mobile terminals have given the public greater initiative. The disseminator can be either the producer of the information, the receiver of the information, or the feedback of the information. The audience shifted from passive "giving and accepting" to "what to think and how to think." The transmission of information has shifted from precise point-to-point transmission to point-to-multipoint diffusion transmission, and finally to interactive point-to-

multi-point communication. In the context of the Internet, information dissemination has shifted from one-way and linear transmission of traditional mass media to a new model of complex intertwined and integrated communication. The identities of audiences rooted in social platforms and online short video users have always coincided. While making original short videos through mobile terminals, these audiences also obtain short video information from others on social platforms. Regardless of the audience's status in the real world, they can interact equally through the medium of short video.

(3) *Algorithms influence the audience's active search for content through push mechanism*

With the advent of the algorithm era, the push mechanism weakens the audience's autonomous search. Originally, the audience had to find relevant information based on the search function. Now the algorithm automatically pushes the relevant information as an intervener in the relationship between the audience and the content. Gradually, users no longer need to search independently to obtain information. They only need to keep refreshing to see the content of interest, which changes the audience's habits and even weakens the audience's ability to collect information.

V. INFLUENCE OF ALGORITHMIC RECOMMENDATION INVOLVED AUDIENCE-CONTENT RELATIONSHIPS

(1) *"Information Cocoon" effect*

The theory of "Information Cocoon" was first proposed by Harvard University professor Cuss Zangstein in his book "Infotopia: How Many Minds Produce Knowledge". This theory holds that in information dissemination, the public only pays attention to the things they choose and the areas that make them happy. Over time, the audience will shackle themselves in the "cocoon room". In the media platform using algorithms, one should be more vigilant due to the accuracy of the algorithm and its recommendations to users. The algorithm as a tool allows the audience to consciously or unconsciously strengthen their preference for obtaining information, and constantly narrows the audience's access to information, resulting in falling into the "information cocoon" and unable to receive broad and diverse information. When personalized news dominates people's consumption of information, algorithmic news creates silos between people. This fear is very common and reasonable. Professor Yu Guoming also talked about in his article. "Bad mental state such as blind self-confidence can occur after long exposure to the information in the cocoon room. Narrow-minded believes that one's own way of thinking will inevitably produce prejudice against oneself, thereby repelling other rationality from becoming truth, especially for the same person's thoughts and behaviors that will become more and more extreme in the future". The original intention of the audience to obtain information is to get close to the truth of things and obtain objective and rational answers. However, an accurate media recommendation algorithm may allow the audience to receive information echoes of "the more they see, the stronger their opinions", causing the alienation of ideas among different

groups. Take the popular product "TikTok" as an example. "TikTok" is a short video social software. One of the reasons people use it is because of its social nature, allowing users to interact with other people through their short video content. The personalized video recommended by the algorithm will cause the content of each person to be different, the personal information exposure range is narrow, and it is easy to be immersed in the field of self-discourse or social networking, and reduce communication with the outside world.

(2) *Fragmentation of information, spurious information*

In modern society, mobile phones and their accompanying application features have become an important basis for social life. For example, when office workers want to spend a moment of leisure time in the bathroom, they are likely to browse through some news via apps and find some interesting videos to share with their circle of friends and family. In the age of audience fragmentation, only such short online news videos can let them understand the news content and themes in a very short time, so that they can decide whether to collect such short videos for their own enjoyment or forward them to other people in the circle of friends.

In addition to its fragmentation, an open and inclusive creative background is also one of the features of short web-based videos. While this open development model has contributed to some extent to the development of short video on the Internet and a new development model for the traditional news media, it also poses a great challenge for the relevant regulatory authorities. Internet short video news dissemination has certain commercial value. The higher the number of video clicks, the certain hidden benefit exists. China has a large number of self-media software with entertaining self-media video users on a larger scale. Some online self-media users will spread false news such as "artificial" news for the purpose of gaining eyeballs and attracting traffic. Audiences will share it without carefully checking the truth of the matter during the fragmented time, making false news even more problematic. In addition, our country's management in this area is still at a basic stage and is not perfect enough. Therefore, the overall management is more difficult. In this regard, relevant regulatory authorities and self-media platform companies need to discover problems and improve them in a timely manner.

VI. CONCLUSION

Using algorithm technology, it is possible to analyze the feedback of the recommended audience to the recommendation information, such as clicks, length of stay, and likes. It enables wider and more accurate recommendations. At the same time, the audience also participates in the closed-loop algorithm recommendation to recommend information for more users. At present, algorithm recommendation is the basic technology of almost all Internet platforms, such as news sites, search engines, social media, and mobile client terminals. As a technical mechanism, algorithm has the ability to select, filter, and disseminate massive amounts of information. In other words, it has a special information dissemination ability that allows users to

choose the power of the moment, becoming an invisible "agenda setting" master. On the basis of net users, a large population exist on social media platforms today. The ability of algorithms to construct an "analogous environment" should not be underestimated. The influence of media platforms on social reality may not change much and the direction and algorithm are established using behind-the-scenes mechanism, which is usually invisible. We can dictate the current information society and audience through the eyes of algorithm. The impact on the entire society and the audience is gradual and profound because people's daily life style, knowledge acquisition and behavior patterns may have all changed.

Nowadays, the domestic algorithm short video platform has quickly entered an explosive period. Up to now, there are more than 200 short video platforms or software applications nationwide, with hundreds of millions of users. But on the whole, online short video news has its advantages and disadvantages. As a popular multimedia platform at the current stage, Internet short video has its unique characteristics and has played a positive role in spreading advanced culture and spreading positive energy. At the same time, in the process of development, we continue to use our strengths and avoid our weaknesses. Taking the core values of socialism as the main theme, promoting short online videos is the right direction. In the future, Internet short video news will also go through a long stage of optimization and improvement, and finally form a mature model that serves the general public and all sectors of society.

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