User Analysis Based on Short Video and Live Streaming

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Abstract

With the development of the mobile internet, short videos, and live streaming have brought new development models for social interaction and consumption of users. From the perspectives of user group classification and behavior analysis, the article takes short video and live streaming as an instance, and then figures out the similarities and differences between the users. At the same time, user characteristics are also focused and compared. In fact, it takes a video anchor as an example to analyze, which is helpful for enterprises to better understand the basic behavior characteristics of users. According to the needs and preferences of users, video anchor can better grasp the development direction of short video and live video with goods, so as to formulate more scientific and effective development strategies.

***Keywords**-short video; live streaming with goods; user analysis; behavior characteristics*

1. Introduction

With the continuous development of the mobile internet and the continuous advancement of the digitalization of various industries, the number of mobile users has shown explosive growth. Especially in the face of the unexpected epidemic in 2020, various offline entities have been impacted to varying degrees. While the business model and sales volume have been impacted, various businesses and enterprises are looking for new development opportunities. The short video, live broadcast mode of the goods has thus begun a new round of rapid development.

Nowadays, time is becoming more and more fragmented. Short videos continue to attract a large number of users relying on the advantages of short duration and low data traffic. The user's usage habits have gradually changed, the preference for short video has increased, and the usage frequency of short video applications has gradually increased as well. At the same time, in order to broaden the number of users and developing online business resources, various industries have begun to realize the emerging model of live streaming delivery, which is gradually changing the consumption habits of users. Whether in traditional or emerging industries, data become more important and valued [1]. In the business or economic field, A large amount of data and analysis can assist in decision-making [2]. At present, the popular user portraits, recommendation systems, and advertising systems in the industry are commonly based on user behavior analysis [3]. The coarse-grained user grouping can be based on user behavior, user attributes and time. Furthermore, it can be combined with machine learning to obtain user portraits [4], and then to carry out user personalized recommendation or precise operation [5]. To get the user's shopping preferences and game preferences, you can accurately push advertisements, and increase the click-through rate or download rate of advertisements [6]. At present, almost all internet applications are pursuing efficient operations, so an efficient user behavior analysis system is undoubtedly very valuable for product operations.

2. Main Content Structure

2.1.Short Video Service

The short video service is a social service designed to share personal life, get to know more friends, and learn about all aspects of society relationship. Users can form their own works or products by shooting short videos

A. El-Hashash et al. (Eds.): IEIT 2022, ACSR 100, pp. 94–100, 2023.
https://doi.org/10.2991/978-94-6463-058-9_17

with appropriate songs. Normally users rely on shooting methods, video editing methods, special effects, dubbing and other technologies to make videos more creative and attractive, thereby forming unique personal works or products.

The difference between short video services and micro movies and micro plots is that there is no specific form of expression in production, and no specific requirements for team configuration. Particularly, it has the characteristics of simple production process, low production threshold, strong participation, and more communication value. Short videos can be complementary to live broadcast services. Early short videos promote the upcoming live broadcast. It can also shoot short videos after the live broadcast to explain and interact with the content during the live broadcast.

However, with the increase of the number of short videos and the number of videos viewed by users, it is increasingly difficult for short video creators to make more interesting and attractive videos. In order to maintain high-frequency and stable content output, and achieve good live video drainage effect through short video, creators need to maintain excellent copy-writing and planning, and also rely on their fan base and user preferences to update more in line with the public aesthetic.

2.2. Live Delivery Service

Live streaming is a commercial model based on content. Originally, live broadcast is only a derivative form based on content, while e-commerce is a derivative form based on commodities. Live streaming will build a bridge between these two forms, combining their contents for e-commerce, and promoting the formation of a new business model.

Traditional content only lies in the creators expressing themselves, expounding their own views, showing personal charm, and catering to the public aesthetics and attracting the audience attention, adding humorous elements for display. However, traditional e-commerce is only a two-dimensional graphic display, and users are often affected by light and models to make purchases. On the basis of the two forms, the live broadcast has built a three-dimensional platform to display more realistic products. The influence of light, models can be reduced to a certain extent, and it is often more advantageous in terms of price. It can also interact with users in real time and answer their doubts in time, and increase users sensory stimulation to a higher level. It will not only promote users' desire to buy, but also make users feel the real product quality.

On the one hand, the live streaming mode has certain requirements for recommending products. The products often have the characteristics of meeting the needs of the public, affordable and durable, and high cost performance. It also needs to arouse consumers' desire to purchase, thereby triggering impulsive consumption. On the other hand, the requirements for hosts and operations are quite obvious, requiring the hosts to speak clearly, look good, have a good sense of lens, and be able to interact closely with the audience. For operators, they need to have certain data analysis capabilities, strong adaptability, and adjusting operational strategies in a timely manner on factors, such as commodities and audience volume.

3. USER GROUP CLASSIFICATION

3.1. User Groups Based on Short Videos

- Producer

Producers can also be called content producers. They often have a strong willingness to express themselves, try new things. They are typical front-end users of the mobile internet, with relatively lively and outgoing personalities, good creative talents, communication, and management skills.

- Follower

Followers are good at discovering interesting content, on the front line of exploration, and expect to shoot equally wonderful videos. Therefore, they often have rapid execution and excellent learning ability, learn and innovate in the process of imitation, and achieve expression with personal characteristics. With the gradual increase in the degree of imitation, such users are likely to form their own styles. Combined with the trend of the times, they will gradually become producers in the field of short videos.

- Consumer

Consumers can be divided into two categories. One type includes users who are not willing to express themselves. They enter the platform only to discover interesting content, and find solace for their life; The other type is the willingness to express themselves, but lack the ability to act, afraid to show up. As a result, they enter the platform to enrich their lives, and they may also have a learning mentality. The second type of users will try to imitate and create their own works after watching short videos for a certain period of time.

3.2. User Groups Based on Live Streaming

- Live broadcast talent

This kind of users are mainly guides with goods, with good expression ability and interpersonal skills, and cheerful personality, warm attitude, can better guide and infect the audience. They tend to have a strong sense of camera lens, are good at dressing themselves, and have rich shopping experience, can develop the selling points of products and express their own opinions, and under

certain conditions. Sometime, they need to guess the consumer psychology of users in a timely manner.

- Operation team

Such users usually act as live broadcast inspectors, monitor product data and the number of viewers during the live broadcast delivery process, and improve the efficiency of live delivery delivery through analysis. At the same time, they also need to appropriately adjust the live broadcast strategy by analyzing the data, including time adjustment, adjustment of goods on and off the shelves, in order to achieve the highest revenue in the shortest time.

- Supplier

Such users are usually explorers in the live broadcast process. They need to have the eyes to discover high-quality resources. They are able to select more potential and suitable live streaming host during a short live broadcast process, and hold a large amount of live broadcast data in order sell products better.

- Consumer

This kind of users are consumers in the process of live broadcasting. They compare prices, watch product introductions, and choose their favorite products in combination with their personal needs; or they are attracted by the personal charm of star anchors, so as to enter the live broadcasting room for consumption.

4. USER ANALYSIS

The user analysis of this module is based on the couple of a star anchor on the platform. The anchor sells a variety of products with different prices, and has a wide audience. Moreover, his humorous language is good at communication, which can attract the audience to place orders, and his sales rank in the forefront of the platform. Through the analysis of different aspects of an anchor, we can more intuitively feel the similarities and differences between short video users and live broadcast users.

4.1. User portrait

- Gender distribution

As shown in Table.1, the gender range of short video and live streaming users is the same. Most of them are women, while men account for less. This distribution is related to the audience of the host. The anchor is a couple anchor, whose merchandise audience is biased towards women, and the main user group is also female.

TABLE I. USER GENDER DISTRIBUTION

Content	Sex	Proportion
Short video	Male	32.49%
	Female	67.51%
Live streaming	Male	32.19%
	Female	67.81%

- Age distribution

The age distribution of short videos and live broadcasts are similar, but slightly different. The majority of users born in the 80s and 90s. This type of users is also a relatively large number of short video and live streaming users in the country. It can be seen that both short video and live streaming are the majority of young users. As shown in Table 2, the 18-24 years old users account for the highest proportion of short video, and 6-17 years old users account for a relatively high proportion. This proportion is related to the couple's life interaction with their children, which is more concerned by the students. Users aged 25-30 account for the highest proportion of live streaming products, followed by users aged 31-35, who are more inclined to users with certain consumption demand and consumption level. Most of their users have left school and entered the society, and are able to consume for their favorite products.

It can be seen that short video users are more likely to be interested in content, and they are content consumers, so their age range is relatively larger. The live streaming users are more inclined to have a certain foundation and ability, for the consumers of goods, the age range is slightly narrowed.

TABLE II. USER AGE DISTRIBUTION

Content	Age	Proportion
Short video	6-17	22.11%
	18-24	26.06%
	25-30	22.11%
	31-35	15.31%
	36-40	6.9%
	41+	7.51%
Live streaming	6-17	3.75%
	18-24	19.12%
	25-30	30.93%
	31-35	26.51%
	36-40	8.64%
	41+	11.05%

- Geographical distribution

As shown in Figure 1 and Figure 3, the top 10 provinces of short video users account for 64.76% of the total, and the top 10 provinces of live video users account for 62.90% of the total. The users are mainly concentrated in the provinces with relatively developed economy and culture. Guangdong Province has the highest proportion of both. As a highly developed city, its core competitiveness is relatively strong.

As shown in Figure 2 and Figure 4. The cities with the largest proportion of short video and live streaming users are Guangzhou, accounting for 6.25% and 5.96%

respectively. The number of users is not much different. This distribution has a certain relationship with the couple's hometown. Generally speaking, whether it is short video or live broadcast delivery, its users are mainly concentrated in first-tier cities and new first-tier cities, which are cities with relatively developed economy and culture.

PROVINCE	PRPORTION
GUANGDONG	22.98%
JIANGSU	6.32%
HENAN	5.85%
ZHEJIANG	5.23%
SHANDONG	4.42%
GUANGXI	4.35%
SICHUAN	4.28%
ANHUI	4.01%
FUJIAN	3.94%
HUNAN	3.60%

Figure.1 Province distribution of short video users, 64.76% of the total

CITY	PROPORTION
GUANGZHOU	6.25%
SHENZHEN	3.33%
BEIJING	2.86%
CHONGQING	2.79%
SHANGHAI	2.52%
FOSHAN	2.38%
HUIZHOU	1.70%
SUZHOU	1.56%
XI'AN	1.50%
CHENGDU	1.43%

Figure.2 City distribution of short video users

PROVINCE	PROPORTION
GUANGDONG	26.21%
JIANGSU	6.46%
ZHEJIANG	6.02%
FUJIAN	5.46%
SHANDONG	5.08%
GUANGXI	4.03%
SHANGHAI	3.75%
HENAN	3.59%
HUBEI	3.53%
ANHUI	3.48%

Figure.3 Province distribution of live streaming users, 62.90% of the total

CITY	PROPORTION
GUANGZHOU	5.96%
SHENZHEN	4.14%
SHANGHAI	3.75%
BEIJING	2.81%
DONGGUAN	2.82%
FOSHAN	2.32%
CHONGQING	1.99%
WUHAN	1.88%
HANGZHOU	1.71%
FUZHOU	1.66%

Figure.4 City distribution of live streaming users

4.2. User Behavior Analysis

- Short video user participation behavior analysis

For live streaming, the short video content of the Tiktok platform has three major functions: (1) Short video content is one of the important sources of streaming in the live broadcast room. The host can publish pre-heated short videos before the broadcast starts, and live broadcast slices are released during the live broadcast, and users can enter the live broadcast room through these short videos. (2) The host can establish a person design by publishing short videos of the person design, and improve the user's cognition and trust of the host. (3) The host can publish short videos of products, display the products they bring, and directly bring the goods, or they can actually understand the needs of users through likes and comments.

There are three main ways for short video users to interact: 'like', 'comment', and 'share'. Users can express their preference for the content of the short video through the act of likes, interacting with the host by comments to express their views and needs, and communicating through social media by sharing to increase the exposure of the short video.

From the perspective of the depth of user interaction, comments are greater than likes. As shown in Figure 5 and Figure 6, the magnitude of likes is significantly larger than the magnitude of comments. The number of short video likes of the host has continued to rise in the past month. It shows the host attaches great notice and has been keeping the release and update of short videos. However, user comments have been declining steadily, and the decline is not significant. The situation has a certain relationship with the user and the deletion of comments by hosts.

Figure.5 Total number of short video users' likes in the past month

Figure.6 Total number of short video user reviews in the past month

- Analysis of consumer behavior of live streaming

As shown in Figure 7 and Figure 8, based on the analysis of the e-commerce behavior and interest of users on the hosts, the top three categories are women's wear, jewelry and face care, and the main demand is female consumers. It's mainly for female consumer products, women's clothing as the largest category, accounting for more than 20%. Among them, seasonal women's clothing is easily affected by the change of seasons. With the advent of spring in March, winter clothing has entered the clearance season. Sales of winter products such as down jackets and knitted sweaters have declined, while spring clothing products such as dresses and shirts have been new, and sales have begun to rise.

In addition, the host's consumer price preference is mainly low and medium prices, ranging from 20-300 yuan, accounting for more than 70%. It is clear that good things with high cost performance are more popular among consumers in this live broadcast room. And more than 10% of high-consumption users buy products with high unit prices in the live broadcast room of the anchor, and more than 3% of consumers purchase products of more than 1,000 yuan in the live broadcast room of the anchor.

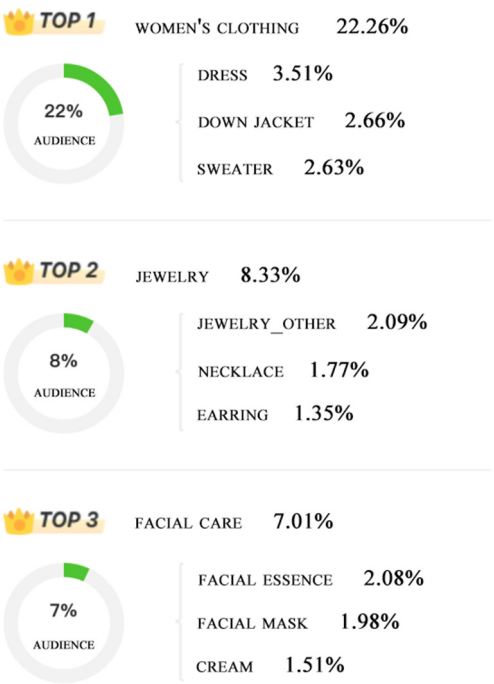

Figure.7 Demand distribution of live streaming purchase categories

PRICE	PROPORTION
0-10	2.93%
10-20	7.64%
20-50	22.75%
50-100	26.41%
100-300	27.27%
300-500	6.06%
500-1000	3.82%
1000+	3.11%

Figure.8 Demand distribution of purchase price for live streaming

Usually, there is a direct relationship between the number of live viewers and the sales, that is, the more the number of viewers, the greater the sales. As shown in Figure 9, the trend of viewership is roughly the same as the trend of sales, but there are certain exceptions. For instance, comparing the live broadcast on March 28 and March 31, this exception has a certain relationship with commodities and holidays. Therefore, in general, the video will be preheated before the live broadcast to attract the audience's attention in advance, so as to increase the number of users and increase sales.

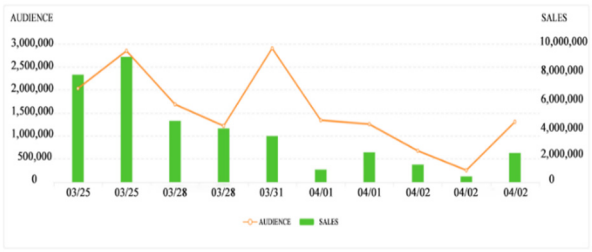

Figure.9 The number of viewers and sales data of the last 10 live broadcasts

5. Conclusions

Through the analysis of users of short video and live broadcasting with goods, we can get the analysis results based on the basic characteristics of users, so as to grasp the development direction of short video and live broadcasting with goods and formulate scientific and effective development strategies according to the audience range, user preferences, user habits, hobbies and other aspects. It helps companies to select products and recruit talents in terms of audience range, while being able to better grasp the development direction of short video and live streaming, and formulate scientific and effective development strategies. Furthermore, enterprises must cater to the market development, constantly adjust the business model based on data mining and other cardinal numbers, and keep pace with the times, so as to continuously attract users and enhance their core competitiveness.

Acknowledgment

This paper is funded by projects: Zhejiang Province (lgf19f020011, Y202044936); Hangzhou (20191203b14).

References

[1] Raghupathi W, Raghupathi V. (2014) Big data Analytics Inhealthcare: Promise and Potential, Health. J. InformationScience and Systems.2(1): 61-62.

[2] Chen x W,Lin X. (2014) Big Data Deep Learning: Challenges and Perspectives.In:lEEE Access.2:514-525.

[3] Yuan Y. (2018) Ontology-based User Portrait Construction Method.In:The 22nd Annual Conference of New Network Technology and Application in 2018 of the Network Application Branch of China Computer Users Association.Beijing.232-238.

[4] Yilin Z. (2019) Research on Big Data Analysis Method Based on Ai Technology. In: Proceedings of 2019 international Conference on information. 113-117.

[5] Min Huang. (2019) Research on Recommendation Technology Based on User Portrait, In: Proceedings of Computer Science. 472-480.

[6] Ou C. (2019) Research on Targeted Placement of Sports Network Advertisement Based on User Behavior Analysis. In: The 11th National Sports Science Conference. 2923-2925