

Game Analysis of Cooperation Between Entrepreneurial Users and Tiktok Platform

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Abstract: In the new era, Tiktok platform has attracted a large number of users with short video and live broadcast functions, forming a huge user group, and the platform's purchasing power has gradually increased, providing rich profit opportunities for entrepreneurial users. Tiktok realizes business value through the output of entrepreneurial users, and both parties achieve mutual benefit in the game. This paper mainly studies how Tiktok and entrepreneurial users can make better profits through game theory. The problem is analyzed by two aspects which are business model and game ecology of Tiktok platform and game relationship between Tiktok and entrepreneurial users. And the game is based on 'Nash equilibrium', through the study, we get the conclusion that the balance of Tiktok and senior users is increasing the service fees and reducing the cost of products and that of Tiktok and novice users is decreasing the service fees and raising the cost of products.

Keywords: Nash equilibrium, short video platform profitability, entrepreneurial users

1. Introduction

In today's era of developed internet, the leading short video platform has become a globally popular social media software. Through technological means, the platform can release various marketing information accurately, repeatedly, and extensively to target consumer groups, thereby achieving the purpose of attracting customer flow [1]. At the same time, the platform also provides a variety of convenient channels for consumers and marketers to interact with each other. Through short video introduction of products and live broadcast of the use and recommendation of products, more young users seeking entrepreneurial opportunities are encouraged to join the platform ecosystem. At the same time, the Tiktok platform draws a percentage and service fees from the profits of these entrepreneurial users to generate platform profits, and ultimately achieve mutual benefit and win-win situation [2]. The main research direction of this paper is how to play games and obtain better profit choices for both parties under the cooperative relationship between business users and platforms. Through the game concept model, the analysis is carried out by assuming parameters and income matrix, which provides ideas for the future development of Tiktok platform and the profit strategy of entrepreneurial users.

2. Business Model and User Ecology of Tiktok Platform

2.1. Business Model of Tiktok Platform

With the arrival of the new era, Tiktok platform has risen rapidly and become one of the social media platforms with large user groups worldwide. Short videos and live streaming features have attracted a large number of users, allowing them to easily share their creativity and life clips. Tiktok platform has not only changed people's social media use habits, but also brought far-reaching impact on cultural communication, consumer behavior and business model [2].

2.2. Tiktok Entrepreneurial Users

The content of Tiktok entrepreneurial users is the core element to attract users' attention and win fans on the platform. They attract users' attention and love by publishing various types of content, showcasing their talents, products, or services, and achieving profitability. The following are the main aspects of Tiktok entrepreneurial user content, which includes creative short video, live content, paid content, social e-commerce content, brand cooperation content [3,4].

2.3. Relationship Between Tiktok Platform and Entrepreneurial Users

On the Tiktok platform, many entrepreneurial users have achieved a certain degree of influence and user attention by publishing various kinds of content. Entrepreneurial users showcase their talents, products, or services on the platform, and quickly accumulate fans and users through the platform's dissemination effect. At the same time, the Tiktok platform also realizes business value through the output of these entrepreneurial users, forming a symbiotic relationship [1,5].

2.4. Profit Strategy of Tiktok Platform

Tiktok platform makes profits through a variety of ways, including but not limited to advertising revenue, live broadcast with goods, paid content, e-commerce cooperation, charging service fees, etc. [6, 7]. This profit strategy not only meets the publicity and promotion needs of entrepreneurial users and brand merchants, but also provides a stable source of profit for the Tiktok platform, thus promoting the sustainable development of the platform. For entrepreneurial users, the ways to make profits through the Tiktok platform are also gradually diversified. They can earn income through flow realization, fan economy, community operation and other ways.

3. The Game Relationship Between Tiktok and Entrepreneurial Users

3.1. Conceptual Model

Tiktok platform can provide short video traffic, live broadcast function and small yellow car mall function, while entrepreneurial users want to obtain a large number of following buyers or fans first need to ensure high-quality video works and use streaming function to improve the exposure of works. If you are a high-traffic startup user, the platform will charge 10% of the revenue after a live streaming promotion, while if you are a small merchant, the platform will extract a different proportion of 2% - 5% commission based on different product categories [8]. The cost of Tiktok platform here is the development and management (labor cost and technical cost) of hot exposure, live broadcast, mall and other functions, while its revenue is the service fee paid by users and the percentage after the product is sold. The cost for entrepreneurial users is the time, effort, and miscellaneous expenses required to produce short videos, or the equipment, labor technology, and product costs required for live streaming, and their revenue is the profit from selling products [9,10].

3.2. Parameter Assumption

Under the established conceptual model, the Tiktok platform has two game options. The first is to reduce the streaming fee, live broadcast gifts and merchandise commissions; The second is to increase the above costs. For users, the first step is to reduce costs, such as hiring a small number of employees to help with video production and product promotion or choosing low-cost products; The second is to increase costs, increase the number of employees and technology to improve video quality, and pursue higher product costs. The assumed parameters are: 0 for smaller profits, -1 for losses, and 1 for larger profits. However, for users in different situations, their revenue choices are also different. It is divided into entrepreneurial user category A and entrepreneurial user category B. Class A entrepreneurial users are senior Tiktok platform users, who have won a large number of fan bases due to the wonderful short video content or excellent products; Class B refers to novice entrepreneurial users, with no traffic or sales of products.

3.3. Payoff Matrix

Table 1: The game between Tiktok and user A.

Tiktok platform/entrepreneurial user A	Reduces cost(single cost)	Increases cost(single cost)
Reduce service fees and commission	0,1	0,1
Increase service fees and commission	1,1	1,0

From the matrix, which is summarized in table1, it can be seen that in the game between Tiktok and user A, user A can make decisions based on the decisions made by Tiktok. If Tiktok chooses to reduce service fees and commissions, user A can make profits regardless of which choice it makes. It chooses to sell daily necessities at a small cost, and then sets a lower price in the market with the promotion power of senior users to make profits through sufficient sales; Choose to sell luxury goods and other products at high costs and profit from high profits. If Tiktok chooses to increase service fees and commissions, User A can still choose to sell more at a small cost, but the choice of high cost and high profit is not the best choice because the commissions of each product's profits will also increase. Therefore, the balance between Tiktok and User A is that Tiktok increases service fees and commissions while users reduce individual costs to ensure sales [5].

Table 2: The game between Tiktok and user B.

Tiktok platform/entrepreneurial user B	Reduces cost(single cost)	Increases cost(single cost)
Reduce service fees and commission	0,0	1,1
Increase service fees and commission	0,-1	1,-1

In the game between Tiktok and user B, which is summarized in table2, Tiktok doesn't want user B to sell low-cost products because user B doesn't have the same ability to carry goods and fan base as user A, so no matter what decision Tiktok makes, the final profit will be very small, while user B can sell some new products or products with few markets, such as the pet sales or local specialty sales that have sprung up in recent years, Freight and cost are relatively high, but novel items can attract the public's attention, coupled with the high quality and after-sales service of the product, it can retain a large number of customers, and for entrepreneurial user B, it can also generate profits from a single product, allowing for continuous operation. If Tiktok increases the bonus, User B cannot accept such

high bonus, so the balance between Tiktok and User B is that Tiktok reduces the service fee and bonus, while Entrepreneurial User B increases the cost to ensure the profit of a single product.

4. Conclusion

To sum up, this paper studies the cooperative profit methods of Tiktok and two different entrepreneurial users through the conceptual model, parameter assumptions and listing the income matrix, and also draws the Nash equilibrium conclusion of the two cases. It is found that Tiktok and two types of users have different cooperation ways, which makes both parties achieve a win-win situation. In this study, from the perspective of game theory, the profit relationship between Tiktok platform and entrepreneurial users is studied in depth. Through the analysis of the cooperative profit game of Tiktok platform, this paper draws the following conclusions: Tiktok platform and entrepreneurial users form a symbiotic relationship, and both sides achieve mutual benefit in the game. Tiktok platform realizes business value through the output of entrepreneurial users, and entrepreneurial users gain user attention and profit opportunities through the communication effect of the platform. The above content provides some strategic suggestions for Tiktok users who want to start their businesses in the future, serves as a reference for scholars who take short videos as the research object, and also makes some contributions to this research field.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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