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**Full Research Paper**

# The Benefit Coordination Mechanism of Cloud Platforms for Rural Cultural Tourism Based on a Case Analysis of TikTok, AAuto, and Bilibili

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**Abstract:** The benefit coordination mechanism of cloud platforms directly affects platform enterprises' competitiveness and plays a vital role in enterprises' sustainable development. In this study, we design a benefit coordination mechanism of cloud platforms for rural cultural tourism by summing-up the two dimensions of the proportion of online and offline user time and the degree of commercialization of TikTok, AAuto, and Bilibili. Research shows that cloud platforms' four benefits are platform traffic, advertising penetration, community ecology, and commercial monetization capabilities. Their interaction is the key to benefitting from cloud platforms. The provided benefit mechanism of the cloud platform for rural cultural tourism can provide theoretical reference and decision-making support for platform enterprises.

Keywords: cloud platform, benefit coordination mechanism, scale effect life, cycle theory

## 1. INTRODUCTION

In China, the rural cultural tourism industry has become a powerful driver to improve agricultural economic interests, increase farmers' income, and inherit the spirit of rural culture. In the context of digitalization, the cultural tourism industry has continued to promote the quality and upgrade of cultural tourism consumption, the short video cloud platform that integrates content production and brand effect has rapidly emerged, and the substantial use of cloud platform has made the operation of cultural tourism industry more intelligent. From the perspective of information production, the popularity of short videos and live broadcasts has lowered the threshold for content production, especially for people in the sinking market. Thus, users have more opportunities to express themselves, and more users use cloud platforms to access the content. From the perspective of information consumption, a short video is inexpensive and readily accepted and created by everyone<sup>[1]</sup>. Online traffic monetization promotes the further strengthening of the commercial monetization capabilities of online and offline communities. The use of cloud platforms seems to increase the benefits of major stakeholders. How their benefits are coordinated and how cloud platforms' sustainable development are promoted are rarely answered in the literature. This study uses dimensions to fill these gaps: the proportion of user time and growth rate and the degree of online and offline commercialization of cloud platforms, the design of the benefit mechanism, and the improved profitability in the rural cultural tourism sector. For early-scale TikTok, AAuto, and Bilibili comparison and analysis, this study uses industries as case studies to investigate the platforms' benefit coordination between the commercialization of public and private domain traffic monetization, advertising penetration, and community ecological cycle domains. This study aims to reduce costs, improve profits and liquidity, and promote the arrival of the era of prosperity of the overall commercialization of the cloud platform of rural cultural tourism.

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## 2. LITERATURE REVIEW

The use of advanced digital technologies has become increasingly valuable in the business sector. The rural cultural tourism industry is no exception. In particular, the use of cloud platforms has accelerated the process of smart tourism in the country. Digital marketing tools, such as cloud live streaming and cloud viewing, allow consumers to understand deeply, explore destinations, and gain access to multiple unique experiences, such as travel stories<sup>[2]</sup>. The rural cultural tourism industry is creating business value with the “new infrastructure,” constantly reforming the management of the rural culture and tourism cloud platform<sup>[3]</sup>, optimizing the service process, innovating the product supply, and promoting the optimization and upgrading of the industrial structure. Currently, China has become the world’s largest tourism market. The rural cultural tourism industry has great potential for economic development. They have become critical in promoting the upgrading of residents’ consumption, implementing the rural revitalization strategy, and supporting high-quality development in the new era<sup>[4]</sup>. The cloud platform is one of the services provided by cloud providers to cloud users, giving consumers the ability to deploy cloud infrastructure applications created or acquired using programming languages, libraries, services, and tools supported by the providers<sup>[5]</sup>. They have significant advantages, such as reducing the burden of the relevant beneficiaries’ complex life cycle<sup>[6]</sup>, reducing deployment and processing times, and improving communication and collaboration among decision makers<sup>[7]</sup>. It promotes the accessibility of the cloud platform and reduces costs<sup>[8]</sup>. From a subjective perspective, people have changed their values and are more in pursuit of spiritual satisfaction<sup>[9]</sup>; relevant APPs emerge at the right moment, such as the cloud platforms TikTok, AAUTO, and Bilibili. Users can conduct real-time online interaction on cloud platforms and can “travel everywhere” without leaving home. From an objective point of view, given the COVID-19 epidemic, the development of the rural cultural tourism industry puts forward new requirements for constructing cloud platforms<sup>[10]</sup>, which require accurate algorithms and exclusive cloud service modules<sup>[11]</sup>.

“Rural cultural tourism” originated in France in 1885. The significant difference between it and ordinary tourism lies in the regional characteristics of the “countryside”. The prosperity of cities after China’s reform and opening up and the acceleration of urbanization have made “rural cultural tourism” in the ascendant. At present, the development of rural cultural tourism has begun to take shape and shows a trend of diversified development. Since the 1990s, China’s rural cultural tourism has started to develop rapidly. In the 21st century, rural cultural tourism has entered a period of comprehensive development. With the increase in tourist attractions, the expansion of scale, the expansion of functions, and the expansion of distribution, a new trend of vigorous development emerges<sup>[12]</sup>. Relevant scholars have paid attention to China’s future rural cultural tourism, and the research direction is the development and application of cultural tourism platforms. Although much attention has been paid to the rural cultural tourism industry and cloud platforms in theory, in-depth discussion on the combination of the two lacks in some research fields. Most scholars still based on the supply chain system and explored the impact on the cost of benefit<sup>[13]</sup>. In practice, although relevant cloud platforms continue to emerge, problems such as conflicts between stakeholders because of unfair returns<sup>[14]</sup>, imperfect benefit systems<sup>[15]</sup>, and short platform life cycles have emerged<sup>[16]</sup>. Therefore, based on the literature review, this study selects the rural cultural tourism industry’s cloud platform, which improves its benefits and has greater influence to find its core benefit factors and lay the foundation for the future development of relevant cloud platforms.

## 3. RESEARCH METHODS

The present analysis draws from a sample of three cloud platforms, which have been scaled in rural cultural tourism in 2018–2020 based primarily on the following criteria: a) Data sources: the official websites of the three

cloud platforms, the China Tourism Research Institute, and tourism industry reports. Qualitative data were collected, and a total of more than 80 attributes, including benefits, rural cultural tourism, and cloud-service-related information, were collected and collated by extracting keywords. b) Research method: Two researchers examined each platform independently and used content analysis to summarize the data. A large amount of information about the platforms was consulted with the emergence of proper nouns to analyze them more effectively. c) Reasons for sample selection: First, the products and services of TikTok, AAuto, and Bilibili, which are the three typical cloud platforms with economies of scale, have a flywheel effect. They all experience the following evolutionary trends: the explosion of the industry, the influx of players, the industry's intensification, the exit of long-tail competitors or annexation by other cloud platforms, the increase in market share of cloud platforms, and the scale effect. Second, they have high fixed costs but low variable costs<sup>[17]</sup>, lowering the threshold for relevant stakeholders to join the platform and creating conditions for increased traffic and advertisers to join. Finally, they have active and quality communities. Key user-side data are one of the key points to increase benefits. Their preliminary development is shown in the following table.

**Table 1. The development history of the rural cultural tourism sector.**

<b>Tape</b> <b>Year</b>	<b>TikTok</b>	<b>AAuto</b>	<b>Bilibili</b>
2018		A poverty alleviation office was set up to explore a new model of "short video, live broadcast + poverty alleviation."	
2019	National tourism content recording platform "700 million +" annual total number of videos related to the tourism industry "38.4 billion +" annual thumbs up on videos related to the culture and tourism industry "2.6 billion +" annual comments on videos related to the tourism industry "800 million +" annual sharing times related to the cultural tourism industry	The "Ten Thousand Villages Anchor Training Plan" is launched. The total benefit of rural cultural tourism users is more than 20 billion yuan. The number of rural cultural and tourism board users is more than 5 million.	The tourism plate has a scale at the beginning. The number of UP owners in the tourism sector continues to rise. More than 50 million videos are on rural tourism.
2020	POI videos as a new way to remember travel "700 million +" card tourism destination "1 trillion +" clocking in video playback volume Rural cultural tourist destinations have become major clocking destinations.	The revitalization of rural cultural tourism is promoted. More than 50 million e-commerce transaction orders for farmers, rural areas and farmers; 650 million + daily playback of short videos; 2.2 million + daily live viewing hours	"Cloud" rural tourism has become a hot spot. UPs help the development of rural cultural tourism and promote rural live broadcasting with goods. The rural cultural tourism sector still needs to be further developed.

Source: Questmobile<sup>1</sup>, 199IT<sup>2</sup>, official websites and news reports of three cloud platforms<sup>3</sup>

<sup>1</sup> <https://www.questmobile.com.cn/research/report-new/128>

<sup>2</sup> <http://www.199it.com/archives/993865.html>

<sup>3</sup> <https://e.kuaishou.com/#/e/report/949>

This study provides a dynamic study of the sustainability and operation of cloud platforms’ benefits, using economies of scale and life-cycle theory to assist in the case analysis. Economies of scale can drive the cloud platform stakeholders to obtain the “long tail” benefits from the distribution curve, reducing the risk of diminishing returns to the traditional supply chain model. The cloud platform’s benefits interact and influence each other in the introduction stage, growth stage, maturity stage, and virtuous cycle stage. The accumulation of traffic, the penetration of advertising, the ecological cycle of community, and commercial capability realization are a gradual process. The purpose of detailing each stage’s benefits is to make the concepts more concrete and turn them into feasible practices<sup>[18]</sup>.

#### 4. RESEARCH RESULTS

##### 4.1 Traffic realization of cloud platform

In recent years, cloud platforms have been equipped with infrastructure based on public and private domain traffic monetization, such as e-commerce, advertising, brand entry, and promotion. The cloud platform’s benefit source has transformed from the initial PGC-based benefit model to the UGC-based model of content platform traffic benefit. The combination of easy-to-produce videos and the recommendation logic of information algorithms have greatly increased the UGC duration and the number of users. As of June 2020, the scale of deduplication users of the three cloud platforms is shown in the following figure.

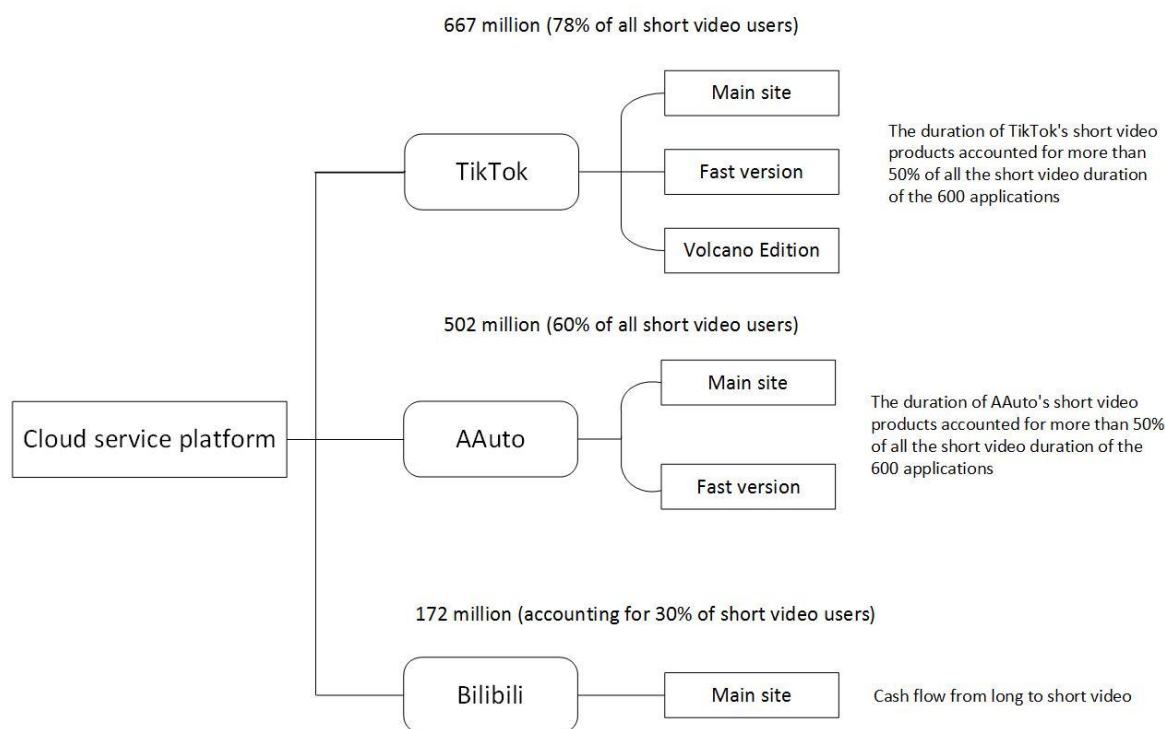


Figure 1. User size of the three cloud platforms.

As shown in the figure, we can conclude that, with the upgrading of information technology, TikTok, AAuto, and Bilibili have appeared in rich and diversified forms to meet multi-faceted information consumers’ needs. The development of Internet content creation media shows a changing trend from long to short video traffic.

Furthermore, our research found that the three cloud platforms’ benefit level is directly proportional to the traffic. The larger the user scales and the longer the use time, the more profitable the cloud platforms can be. In terms of content consumption, the user growth rate of the three UGC content cloud platforms, TikTok, AAuto, and Bilibili, is faster than the growth rate of the entire network.

**Table 2. MAU and DAU of cloud platform.**

Index \ Type	TikTok	AAuto	Bilibili
MAU (million)	527	447	119
yoy	14.0%	36.7%	23.9%
MAU (million)	296	211	35
yoy	26.1%	18.9%	41.5%
DAU/MAU%	56.2%	47.2%	28.9%
Per capita usage time per day (min)	93	87	77
yoy	40.4%	17.7%	15.9%
Per capita daily usage times (time)	14.2	19.8	11.2
yoy	36.6%	5.6%	11.7%

Source: Official websites and news reports of three cloud platforms<sup>4</sup>

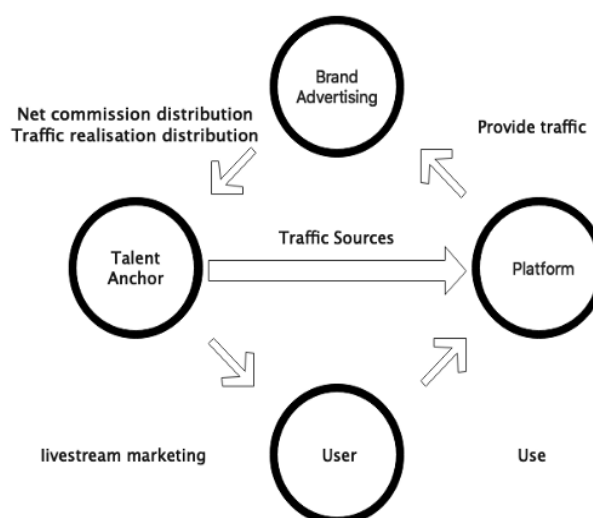
Based on the above research of QuestMobile, China's mobile Internet has a net increase of 7.96 million monthly active users in the first nine months of 2020, surpassing the 7.04 million annual net increase in 2019. The total duration of TikTok, AAuto, and Bilibili increased by 98%, 73%, and 100%, respectively, which are all higher than the average market.

The ecological cycle of flow realization (Figure 2):

- The three cloud platforms paid more attention to private domain traffic value in the initial stage and were more monetized based on talents. The purpose was to reduce platform costs and increase user scale.
- With the improvement on the infrastructure of cloud platforms and the enhancement of information technology<sup>[19]</sup>, TikTok, AAuto and Bilibili opened up more public domain traffic.
- The deep integration of a large number of anchors and advertising benefits has led to the formation of an ecologically healthy development.

#### 4.2 Monetization of advertising penetration

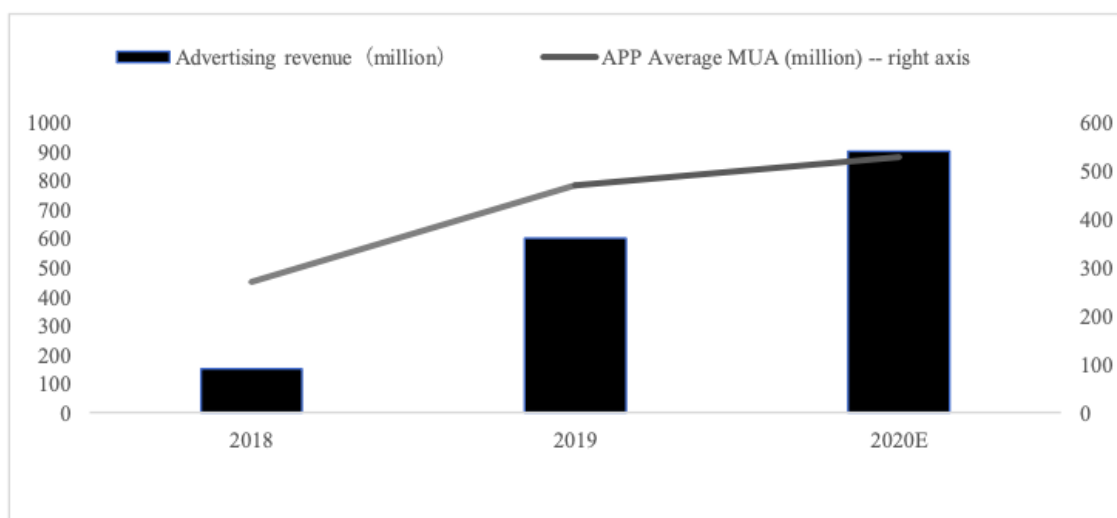
A typical representative of cloud platforms' monetization method is advertising, whose major forms are the selling of resources by cloud platforms to advertisers. TikTok, AAuto, and Bilibili use the fan base and the video content production capabilities of talents and anchors to help advertising companies and brand owners in content marketing and promotion. Thus, the rentals of the beneficiaries associated with being stationed in the cloud platform are increased, and the talents and anchors can attract traffic in exchange for commissions, further making the ads and brands more popular to achieve a win-win situation of benefits.



**Figure 2. Ecological cycle of flow realization**

<sup>4</sup> <https://www.pmtemple.com/academy/2312/>

#### 4.2.1 TikTok has a high advertising penetration rate and maintains rapid benefit growth.



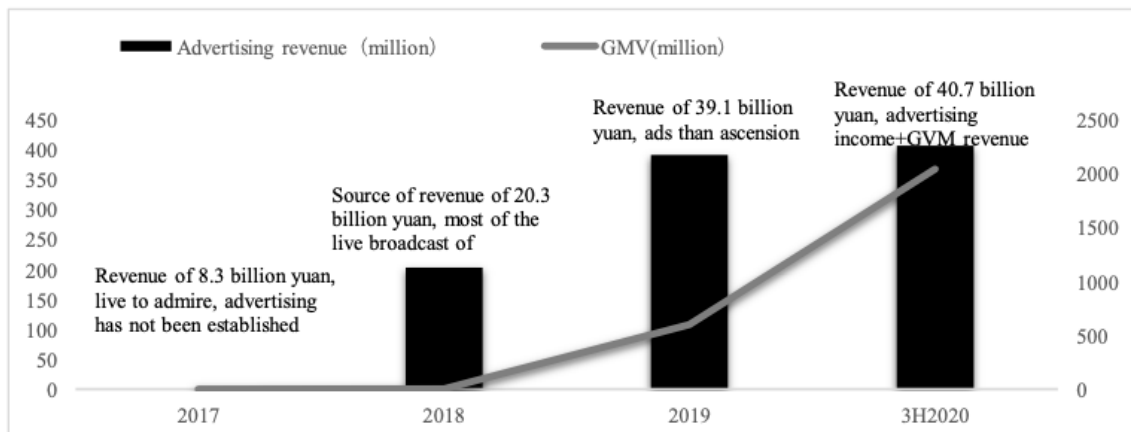
Source: The annual ecological report of TikTok's official website<sup>5</sup>

**Figure 3. Advertising benefit of TikTok.**

TikTok's advertising benefit continues to rise in 2018, 2019, and 2020 at 15 billion, 60 billion (YOY +300%), and 90 billion yuan (YOY +50%), respectively. TikTok began to lay out its advertising system in 2017. From the fourth quarter of 2020, the layout of TikTok's brand advertising, information flow effect advertising, and search advertising has been completed. TikTok fully rolled out on Blue V2.0, carrying out super challenges, setting up screens, recruiting fixed-space ads, putting up brand areas, and designing shopping carts. Its advertising benefit has maintained rapid growth. In 2020, Bytedance increased its investment, the online shopping cart function became an essential strategy for attracting advertising and traffic benefit, TikTok cut off external third-party links, and product purchases can only be made from TikTok stores. According to official data on the website, in 2020, the overall GMV of TikTok e-commerce companies increased by 12 times, the GMV of TikTok stores increased by 44.9 times, and the number of businesses that opened stores increased by 17.3 times. The increase in merchants and the deepening of advertising penetration have continuously reduced monetization unit cost, and the cloud platform has formed a considerable profit dividend.

<sup>5</sup> <https://open.douyin.com/platform>

#### 4.2.2 AAuto opens public domain traffic, and advertising benefit continues to increase.



Source: AAuto's marketing platform and annual report<sup>6</sup>

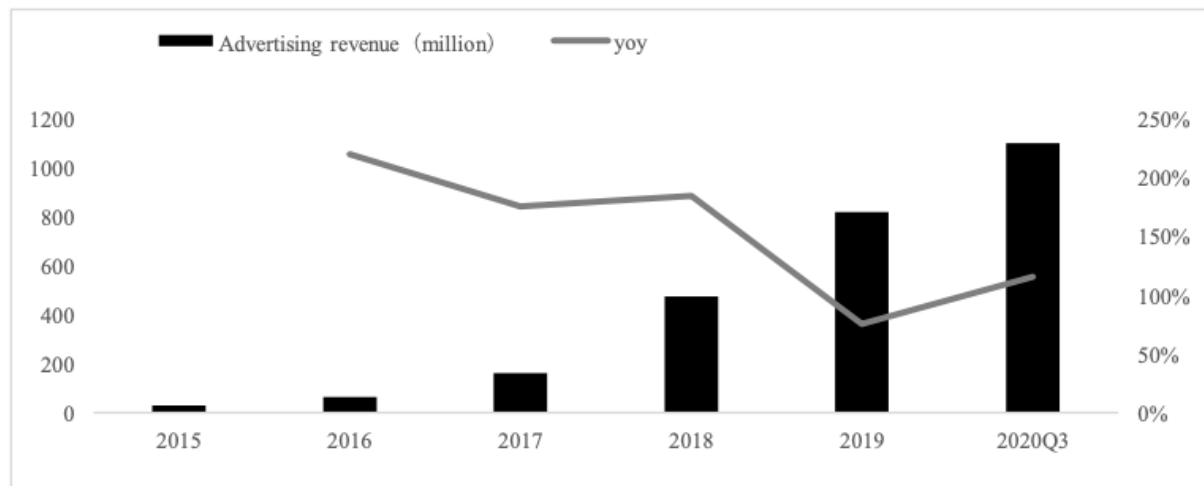
Figure 4. Advertising benefit of AAuto.

Before 2018, AAuto had most of its benefits from live streaming rewards. It paid much attention to private domain traffic while public domain traffic was weak. The cloud platform upholds the concept of neutrality and non-disturbing user values. Most of these content distributions are given to big data algorithms and have less controllable and operable traffic.

From 2019 to 2020, AAuto launched information flow advertising based on commercial technology and continuously upgraded its advertising system, opening up more public domain traffic for commercialization. Its advertising benefits have grown rapidly. Benefits were from 1.7 billion yuan in 2018, 7.4 billion yuan in 2019, and 40.7 billion yuan in the first three quarters of 2020.

AAuto improved the ecology of anchors and invested more in its cloud platform's infrastructure, such as standardizing the management of anchors and unblocking advertising promotion channels.

#### 4.2.3 Bilibili transformation and upgrading, advertising benefit play a new pattern.



Source: QuestMobile and Bilibili's annual report<sup>7</sup>

Figure 5. Advertising benefit of Bilibili.

<sup>6</sup> <https://e.kuaishou.com/#/e/report/952>

<sup>7</sup> <https://www.bilibili.com/read/cv9100644/>



Bilibili's main product is a long video that emphasizes community attributes and user experience, but its weakness is that advertising is inefficient. Thus, in 2016, Bilibili held an advertising solicitation meeting, proposing three advertising forms within Bilibili, namely, regular hard ads, infomercials, and UP owner-created video ads. In 2017–2019, the AD TALK advertising and marketing promotion campaign fully integrated resources. Its advertising benefits grew from 61 million in 2016 to 1.12 billion yuan in the first three quarters of 2020 (yoy+112%), and the turning point for its rapid benefit growth was the recommendation algorithm for video length realizations (Efficiency of realizing long videos = consumption of production costs per unit of time / value gained by users). Consequently, Bilibili increased the promotion of short videos in 2020, creating an efficient traffic attraction effect. This practice has achieved the UP owners and increased the overall benefits of Bilibili.

#### 4.3 Community ecological circulation

With the upgrading of information technology, the spiritual world of users is constantly enriched. Given the stratification of people's interests, various community cloud platforms need more personalized expression. The essence of community is to co-create, distribute, and socialize themes based on personal interests and promote interaction between users and cloud platforms. TikTok, AAuto, and Bilibili have launched creator support programs, incentivizing creator content production through cash, exposure of traffic, and protection of originality and thus increasing the benefits of cloud platforms.

**Table 3. Community growth of cloud platforms.**

<b>Tape</b> <b>Year</b>	<b>TikTok</b>	<b>AAuto</b>	<b>Bilibili</b>
2018			Create incentive plan
2019	DOU Zhi plan; VLOG billion traffic support plan, and TikTok game star group plan; Creator growth plan, live broadcast of "Dark Horse Plan," TikTok live broadcast of the creator conference, Online "Creator Academy"	Photosynthetic plan, Million game creator support plan, Education ecology partner plan, Gorgon plan, AAuto Yinyuetai music anchor support policy, Kuaizhi plan, 2020 Shuochengren training plan, ACG photosynthetic creator conference	Creation incentive rookie award, Vlog star project; The fourth rising star project, Small universe rising star project, The fifth rising star project, Music star project, Curiosity project, UP master activation project
2020	DOU growth incubation camp; TikTok Musicians 100 Million yuan subsidy plan, Educational live IP activity "Teacher Please Come on Stage," and 2020 TikTok creators conference	Original preservation program; Original music billion yuan incentive plan, Starfish plan, Cultural tourism photosynthetic plan, Virtual idol, "AVI alliance plan"	Dance treasure hunt plan, Dance talent recruitment plan, 360 line recruitment plan

Source: Official websites<sup>8</sup> and news reports of three cloud platforms<sup>9</sup>

The above table shows different stages of community growth. In the first stage, the community needs to determine the theme, algorithm, direction, and other basic work to ensure the community's basic benefits and survival. In the second stage, the cloud platform needs to explore community content, cultivate community culture, expand the audience's scope, and increase the cloud platform's benefit. In the third stage, the cloud platform needs

<sup>8</sup> <https://union.bytedance.com/open/>

<sup>9</sup> <https://ir.bilibili.com>

to coordinate flow allocation and benefit coordination to realize the community's self-evolution and development based on the large enough creators, consumer groups, and capital inventory of the community.

The richer form of content on the cloud platform attracts creators to flock to the community, forming an economy of scale effect. Users are willing to spend to exchange different services and products and continuously meet users' demand for content consumption, while the cloud platform also gains benefits<sup>[20]</sup>.

#### 4.4 The highlighted value of commercialization

Commercialization is an integral part of maintaining sustainable benefit growth of cloud platforms, and its core principle is to provide the corresponding commercial realization path according to the highest realization efficiency<sup>[19]</sup>. The entry into commercialization stages requires the support of public and private domain traffic, advertising penetration rate, and community growth degree. The platform's commercial benefits will only grow exponentially after its traffic reaches a certain level. For example, when the traffic of a cloud platform is small, advertisers are only willing to put good ads; when the traffic of the cloud platform reaches a specific scale, advertisers will invest more money and increase the budget according to the considerable influence and communication ability generated by the cloud platform. As the community grows, the brand will tap the benefit potential for the cloud platform, promoting commercialization benefits and forming the closed loop of benefits of the cloud platform<sup>[17]</sup>.

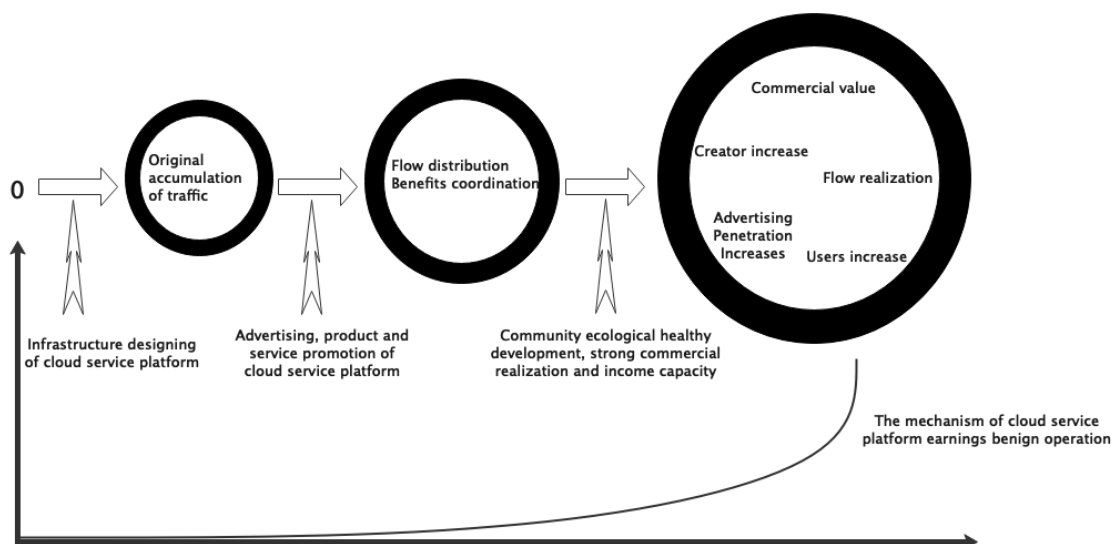


Figure 6. Benefit closed loop of the cloud platform.

Users of TikTok, AAuto, and Bilibili have stabilized at the level of hundreds of millions of MAU. The advertising penetration rate is high, and the ecological situation of the community is improving, entering the accelerated stage of commercialization.

TikTok has started its commercial business layout in the first quarter of 2018, launching shopping carts and advertising functions of millions of community goods alliances. In 2019, it launched the Community Goods Alliance and reached agreements with platforms such as JD and Vipshop. From August 2020, the cloud platform has cut off external links to products. All video and live broadcast products can only come from TikTok stores. The platform charges a 20% service fee, and TikTok stores charge a 5% service fee. According to the official data released by TikTok from January to November 2020, the overall GMV of TikTok e-commerce has increased by 11 times, the GMV of TikTok stores has increased by 44.9 times, and the number of stores opening stores has increased by 17.3 times.

In 2017, AAUTO began to build commercial functions, and live broadcasters spontaneously formed a phenomenon of bringing goods and rewards to become the main source of AAUTO's benefit. In 2018, the shopping cart function was started, and AAUTO stores were launched to achieve GMV 100 million in benefit. In 2019–2020, AAUTO developed rapidly, forming a commercial ecosystem, training and supporting mid-waist anchors. The effect of traffic benefits generation is obvious from GMV 60 billion in 2019 to over GMV 100 billion in the third quarter of 2020.

Bilibili opened the UP main commercialization functions test of 2018 and launched the “Reward Program” public test, allowing UP owners to earn benefits by placing advertisements or product links under the video. Bilibili launched the “Takeoff Plan” in May 2020. UP owners purchased FeiCoin and recommended content manuscripts and live broadcast rooms to the appropriate community, achieving accurate work recommendation and drainage effects. In July 2020, it launched the online “Huahuo Platform” to connect with owners and advertisers. Advertisers can send invitation orders to the UP hosts of the cloud platform and pay them commissions. The cloud platform only charges 5% service fees, realizing a win-win situation.

## 5. CONCLUSIONS

According to the case analysis of the cloud platforms TikTok, AAUTO, and Bilibili, we can summarize the design of the benefit mechanism of the cloud platform of this study as “1+2+3+4+⊕.” Through the data and content analysis of the three cloud platforms, this study designs a reasonable benefit coordination mechanism for rural cultural tourism cloud platforms by summarizing two dimensions of online and offline user time ratio and commercialization degree with the help of economy of scale and life cycle theory. The findings show that the cloud platform's four main advantages are platform traffic, advertising penetration, community ecology, and commercial monetization ability. The interaction between them is the key to influence the benefits of the cloud platform. The ultimate goal is to provide theoretical and decision-making references for the sustainable development of rural cultural tourism cloud platforms.

This study reveals two aspects of significance. In terms of theory, our study enriches the connotation of life cycles theory and economic scale theory and focuses on designing a suitable benefits mechanism for the research object of the context of the times. It also gives new momentum to China's rural revitalization and provides services for future policy formulation. On the practical side, it addresses China's main contradictions, forms a gain mechanism of cloud platform with Chinese characteristics, and provides measures and guidance for the guarantee of gain and the specific practice of gain for relevant interest subjects.

## 6. FUTURE PROSPECTS

The design of the benefit coordination mechanism of the rural cultural tourism cloud platforms should be adjusted and upgraded according to economic development trends and technological changes. It must have the concept of coexistence of risks and benefits and formulate a benefit mechanism from the perspective of long-term development. Great attention should be paid to the formulation of anti-monopoly and anti-unfair competition policies in the superstructure to form a strong regulatory environment, build a good atmosphere in the economic market, and avoid vicious competition among cloud platforms for rural cultural tourism.

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