

Analysis of the Development Trend and Competitive Strategies of Cloud Service Companies - Take Tencent Cloud as an Example

Ji Zhang^{1, *}

¹School of business, Magdeburg University, Magdeburg, China

*Corresponding author: 631301110203@mails.cqjtu.edu.cn

Abstract. Internet enterprises with the rapid development of computer networks, small and medium-sized enterprises usually can not afford to build and maintain the cost of the server, the cost of using cloud services for large enterprises, security, and post-maintenance is usually more cost-effective than the formation of their servers. The main enterprises in the domestic cloud service market are Alibaba Cloud, Tencent Cloud, Huawei Cloud, and Baidu AI Cloud. Based on market research data, statistical data, and the use of SWOT analysis, this paper analyzes the current situation of the domestic cloud services market and the competitive environment. The study concludes that the current cloud service market is still in the development stage, but due to the rapid development of computer technology and the Internet, future development will accelerate more and more. Cloud service providers should improve service quality and users' consumption experience to protect their market share and prepare for future competition with other cloud service providers.

Keywords: China cloud services Market; competitive dynamics; Tencent cloud.

1. Introduction

1.1 Research Background

Businesses cannot grow without computers, and Internet businesses need to have their own servers. However, it is expensive to set up a server, and if there is a high demand for performance and network, multiple servers or a data center are needed. The initial construction cost is very high, and the later maintenance and operation cost after the construction is completed also requires a large investment, which is difficult for many small and medium-sized enterprises just starting to bear. Cloud services are efficient, low-cost, and highly secure, enabling people to access software applications over the Internet instead of traditional back-end physical servers, processing and storing large amounts of data, helping developers save on development costs, and its billing model is usually based on users' actual usage, unlike more traditional subscription-based pricing models.

As cloud services become entrenched and continue to exist in all aspects of business and family life, it is undoubtedly going to be a growing market. The main platforms currently providing cloud services in China are Alibaba Cloud, Tencent Cloud, Huawei Cloud, Baidu AI Cloud and others. Among them, Tencent has a very high volume of users in social software, audio and video software, games and entertainment software, and is also prominent in cloud services, so the market environment analysis of Tencent Cloud, here choose Alibaba Cloud, Baidu AI Cloud and Tencent Cloud to do the comparison. Since 2006, Amazon's technology has changed the economics of cloud computing [1]. In 2008, Alibaba started to build Alibaba Cloud in China. In the period 2009-2016, cloud computing is becoming more functional and diverse, and Tencent formed Tencent Cloud in this period. During 2016-2019, with deep competition, the market pattern is relatively stable and cloud computing enters a mature stage [2]. Since 2020, affected by the new crown epidemic, global cloud computing is entering a new phase, and the size of China's IaaS market in the fourth quarter was 3.49 billion USD.

It is evident that cloud services have taken root in China and have an extremely large user base, so the current state of the cloud services market and competitive environment in China is worth analyzing to help readers better understand the current situation.

1.2 Literature Review

Zhu Xiaojiang mentioned the following viewpoint in the 9th issue of Economic Perspective in 2011: Different backgrounds of industrial entities will certainly bring different cloud computing business models, if the industry chain integration is carried out while considering the combination of IoT technology to expand the end-to-end industry chain, will occupy a relative initiative in the new technology revolution. Its business model will be more competitive [3]. Wenhong Chen in 2019 East-West Center mentions the following point: as of 2018 China has more than 800 million internet users and China has become a global leader in e-commerce, mobile payment and gaming, however, the economic and social value of big data depends not only on quantity but also on diversity and accuracy, and the quality of data may limit the value of big data in China [4]. Jin Feng in the 11th issue of 2020 communication world proposed Tencent cloud in addition to the advantages of local enterprises, but also as a technical service provider rather than an e-commerce platform, there is a series of mature meetings, payment, live broadcasts, and other tools into the Canton Fair work to promote [5].

Yao Xinlu made the following observation in 2020: Many "tech giant clouds" started in 2015-2017, such as Huawei Cloud, Baidu Cloud, Meituan Cloud, Jingdong Cloud, and Netease Cloud, to name a few. 2018 ended with the beginning of the hard times for cloud computing companies. After the Internet's top companies and companies within their systems have all gone to the cloud, the incremental space is rapidly declining. The industry believes that the future focus is on tapping the traditional enterprise and government markets, and the public cloud has entered a period of slow development. Having more SaaS partners enables cloud service providers to offer richer products, just as when people use smartphones, they look more at the number of apps they can use. Then again, suppliers in many vertical industries can help cloud vendors understand certain industries more deeply, such as industrial manufacturing, medical education, etc., so that they can work together to create solutions for customers. Now the market is very homogeneous, technology, price are similar, does not affect the customer's choice [6].

Based on previous views and opinions, this paper analyzes the development trend and competitive environment of China's cloud service market, using Tencent Cloud as an example.

1.3 Research Significance

Cloud services have evolved with the spread of personal computers, the need for interactions between businesses, data storage and processing, and now companies and individuals from all walks of life can use this tool to assist their work. Cloud services will further facilitate people's production and life in the future with the advancement of network and computer technology. Domestic cloud service providers started around 2010, these early start cloud service providers because they have more capital investment and first-mover advantage, in the domestic cloud services market occupies a high market share, such as Alibaba Cloud 2022 first quarter market share reached 36.7% [7].

However, Alibaba Cloud's market share is showing a trend of slowly decreasing quarter by quarter, and it had been as high as 46.4% in the fourth quarter of 2019, which indicates that the cloud service market is actually in fierce competition, and even an Internet giant like Alibaba has difficulty maintaining a stable market share of its cloud services.

In this paper, we have read several survey data, reports and statistics from research institutions, which show the current situation and changes in the domestic cloud service market more clearly, but these contents give less subjective views and suggestions. This paper combines the data contained in these materials and uses SWOT analysis to analyze the development situation of the domestic cloud service market and competition strategies, mainly taking Tencent Cloud as an example, because This company mainly operates a software business with a high frequency of use by domestic Internet users and strong user stickiness, and its cloud services currently rank in the top three in terms of market share, making it a cloud service provider worth analyzing. By analyzing Tencent Cloud, this paper makes reasonable assumptions and suggestions on the future development trend and competitive strategies of cloud services.

This paper mainly analyzes the domestic cloud service market, takes Tencent Cloud as an example, and makes an analysis of the current market environment and competitive strategy of cloud service makes reasonable assumptions and suggestions on the future development trend and strategy. By reading this paper, readers can have a better understanding of the current domestic cloud service market, and can also provide some references and help for later research. However, due to the extremely high speed of development of the Internet and computer technology, the assumptions of this paper on future development and competition are likely to differ significantly from reality.

2. Tencent Cloud's Development Overview and Competitive Landscape

2.1 Overview of Tencent Cloud's Development

Differentiated analysis of the solutions listed on the official websites of Tencent Cloud, Alibaba Cloud and Baidu AI Cloud, the services provided by the solutions are mainly divided into generic solutions and industry solutions. Tencent Cloud, Alibaba Cloud and Baidu AI Cloud provide generic solutions with little difference, all providing basic, wide coverage and generalized services in big data, security, artificial intelligence, cloud computing, Internet of Things and enterprise services, which can cover a wide range of user groups.

In terms of industry solutions, they can reflect a certain degree of differentiation due to the different directions in which each company mainly operates. Tencent Cloud's industry solutions include: audio and video, media, finance, education, government, games, cultural travel, cycling, transportation and logistics, medical, manufacturing, energy and resources, intelligent terminals, real estate, and Internet. Alibaba Cloud's industry solution categories are new retail, finance, digital government, manufacturing, energy, healthcare, transportation and logistics, games, audio and video, real estate parks, cultural industry, cultural tourism, and e-commerce. Baidu AI Cloud's industry solution categories are smart city, smart finance, smart manufacturing, and smart energy. Smart Media, Mutual Entertainment, Smart Weather, Smart Water, Pan-Transportation, Education Cooperation and Co-Building, Smart Telecom, Double Carbon, and Others.

Tencent Cloud development cloud services initially served small and micro banks, live broadcast platform, its social software, games, and entertainment software has a huge amount of users and can accumulate a lot of experience and data, so Tencent's solutions are also more inclined to audio and video, media, finance, games, etc. Alibaba built Alibaba Cloud for the better operation of its e-commerce platform, so in the new retail, financial more advantageous. Baidu AI Cloud is the result of Baidu's emphasis on AI, and artificial intelligence, it is earlier in the country to develop technologies such as autonomous driving, its focus on artificial intelligence aspects of cloud solutions. Therefore, the advantages of Tencent Cloud mainly lie in the user volume and rich experience accumulated by its main business of audio and video, games and entertainment, and financial services.

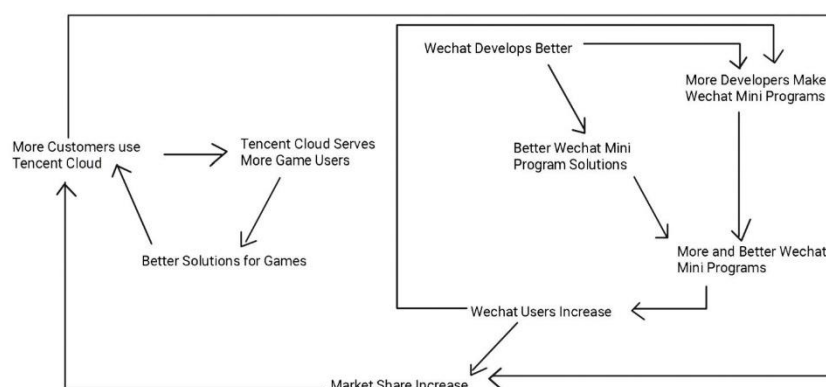


Fig. 1 Tencent Cloud virtuous business cycle diagram using WeChat applet and game services as examples

(Photo credit: Original)

As the number of WeChat users is huge, it is also easier for developers of various applications and tools to choose WeChat applets to adapt and develop corresponding services. As the use of WeChat becomes more convenient and fully functional, more and more users will use WeChat for a long time. This will not only help Tencent Cloud accumulate experience and technology of WeChat's services to users but also accumulate experience and technology of applets' services to users. With a better accumulation, it will also make future developers more willing to choose WeChat applets as one of their service platforms. Tencent Cloud's market share will also increase with the gradual growth of developers and users.

Tencent has more game users and better ability and experience to provide cloud services such as data processing, firewall, game acceleration, etc. to game developers, publishers, operations and players, so game developers are more likely to use Tencent's game-related cloud services, operations are more likely to choose Tencent's cloud services for data processing and storage, and the final products are more likely to be promoted and registered through Tencent. Players who play the product are actually served by Tencent's cloud, which promotes Tencent's cloud to build better services, forming a virtuous circle.

The following table shows the charges for one type of cloud service provided by Tencent Cloud. In general, each cloud service has a charging model based on usage, time, flow and number of uses.

Table 1. Tencent Cloud's three billing models [8]

Billing Model	Annual and monthly subscriptions	Usage-based billing	Tiered pricing
Billing method	Prepaid	By actual resource usage	Hourly tiered billing
Billing unit	Monthly billing	Hourly billing	Hourly step billing
Applicable scenarios	Business is more stable and needs to be used for a long time	The business has high volatility	Large business scale
Advantages	Lower unit price than usage-based billing, stable resources	Can be used first and paid later, resources flexibility	The larger the quantity used, the lower the unit price
Disadvantages	Not returnable at will, Change of configuration is restricted	Higher unit price, unstable resources	Unstable resources

Unlike Tencent's initial value-added services in QQ (such as QQ VIP and QQ red diamond) and the current Tencent video value-added services (such as Tencent video VIP) and other software platforms, Tencent Cloud services treat all users equally, and all newly registered users enjoy a certain amount of free experience content, limiting the number of times, time and traffic under the charging standard. After users have exhausted the free experience, they will need to pay for all content. There is no such thing as enjoying the lower version of services for free and the higher version for a fee. Therefore, when users use Tencent Cloud services, they must purchase the traffic, hours, and other billing units they think are appropriate for their own level after the free experience is consumed to continue using the services normally.

The charging model of Tencent Cloud is not significantly different from other cloud services, and the charging models of domestic cloud platforms such as Alibaba Cloud, Huawei Cloud and Baidu AI Cloud are all such models. Compared with communication and social networking software, audio and video platforms, shopping platforms, game software and other applications with a wider number of users and higher frequency of use, cloud services are more like specialized tools, and their main consumer groups are software and hardware developers and application Information technology more

in-depth users. With the extensive life of users, consumer software can provide a lot of basic free services because they can earn a lot of advertising fees, service fees, and value-added business fees from advertisers, resident merchants, and users. For example, shopping software can collect certain platform service fees and promotion fees from merchants, and consumers who want a better shopping experience and benefits also need to top up their shopping platform membership.

Cloud services as specialized tool services for enterprises, software and hardware developers, usually no third party to join, only generate direct service fees.

2.2 Competitive Landscape of Tencent Cloud

Tencent Cloud will now mainly compete with Alibaba Cloud, Huawei Cloud and Baidu AI Cloud. Several of the top cloud providers are currently investing money and technology in their respective areas of expertise and trying to broaden their service offerings. Cloud services service experience and technology will grow with the accumulation of time, which is different from the traditional hardware services manufacturers, such as cell phones, in addition to technological advances in software, relying mainly on upstream manufacturers of research and development, as long as the replacement of the latest hardware to catch up with the pace of other cell phone manufacturers in the same industry, cloud services in one aspect of the service do not reach a dominant position of enterprises want to catch up with the dominant enterprise are still more difficult.

On the other hand, cloud services have now matured, but because of the huge Chinese market, there is still a large vacancy, Tencent Cloud also faces two kinds of competitors, one is the company behind the same strong, just cloud services market share is not high, such as Tianyi cloud, there are also some preliminary construction of cloud services that sink to the small and medium-sized cities cloud service providers, they stabilize their position in the local, small and medium-sized cities on the demand for technology updates not as high as the big cities. If there is no larger service gap and user experience, users in small and medium-sized cities may not take the initiative to change cloud service providers.

3. SWOT Analysis of Tencent Cloud's Competitive Strategy

3.1 Advantages

3.1.1 High User Stickiness

Tencent has a very large user base in China, and many of its businesses have a high proportion of users in the same industry. For example, WeChat and QQ are social networking software, and WeChat also serves as an important tool for mobile payment for many users, QQ Music and Tencent Video are audio and video software, League of Legends, Crossfire and Dungeon & Fighter are games and entertainment on the PC platform, and Honor Of Kings and PUBG mobile are on the mobile platform, online literature includes QiDian Chinese and ChuangShi Chinese, as well as QQ Browser, Sogou Input Method, YingYongBao, Tencent Meeting, and other tools that users will use frequently in their daily work and life. These businesses were created and developed in line with the needs of Chinese users, and have a high degree of matching with user needs and high user stickiness.

In the survey questionnaire Statista Tech Giants China 2019, Tencent has a high rating in terms of popularity, frequency of use, and meeting usage needs, which reflects Tencent's advantages in serving users [9]. Tencent's main service user groups are most Internet users, and the services they use more frequently are mostly audio and video, social networking, mobile payment, and games. There is no threshold for these services to be used, and as long as there is hardware that can be connected to the Internet, such as cell phones, computers, tablets, etc., they can use these daily functions regardless of geographic location. This also lays the foundation for Tencent Cloud to accumulate massive data and experience in serving users, which can help Tencent Cloud provide better services in the face of diversified users and demands, and also better maintain the daily operation of cloud servers.

3.1.2 Tencent Cloud's Service Stability

As shown in Figure 1, because of Tencent's large number of users, experienced services, and strong cloud service capabilities, it will be relatively easier for developers in audio and video, entertainment and social software to choose Tencent Cloud to do their development work when there is not much difference in the price of cloud services. This will also feedback a certain number of users and market share to Tencent.

In addition, compared to the Baidu AI Cloud, Tencent Cloud's service use threshold is lower. The practical application of artificial intelligence technologies such as Baidu AI Cloud's smart city and autonomous driving requires certain infrastructure, and it takes some time to promote them in developed cities, while the application of these technologies in smaller cities may be more distant. The cloud services provided by Tencent are mainly online and can be applied even by developers and SMEs in relatively remote areas. Tencent Cloud is a low-threshold, online-based service that is more grounded and more frequently used by users than smart cars, smart cities, and other high-threshold services that require supporting hardware.

Tencent Cloud invested 51.8 billion yuan in R&D in 2021, higher than Alibaba Cloud and Baidu AI Cloud. Cloud service technology requires accumulation and continuous R&D, and Tencent Cloud has more advantages in expanding services in the future because it has invested more R&D funds and already ranks high in China's cloud service market.

3.2 Disadvantages

3.2.1 Small Market Share

Tencent Cloud currently has a low market share in the domestic cloud service market. According to Statistic's statistical report, Tencent Cloud only has a 16.6% market share in China's cloud service market by the third quarter of 2021. Alibaba Cloud has a great advantage in the cloud service market share. , "Other" category also accounted for 19.9% of the market share, indicating that Tencent Cloud is still in the stage of gaining more market share, and its status in social communication, audio and video, and game services in China is not consistent. Tencent Cloud started a little later than Alibaba Cloud, which may be one of the reasons for the low market share.

Table 2. 2019Q4-2021Q3 China Cloud Service Market Share [10]

	19Q4	20Q1	20Q2	20Q3	20Q4	21Q1	21Q2	21Q3
Alibaba Cloud	46.4%	44.5%	40.1%	40.9%	40.3%	39.8%	40.1%	38.3%
Tencent Cloud	18%	13.9%	15.1%	15.8%	14.9%	13.7%	15.1%	16.6%
Baidu AI Cloud	8.8%	8.6%	8%	7.1%	8.4%	7.2%	8%	8.2%
Huawei Cloud		14.1%	15.5%	16.2%	17.4%	19.7%	15.5%	17%
Other	26.8%	19%	21.3%	19.9%	18.9%	19.7%	21.3%	19.9%

3.2.2 E-commerce, AI, and Other Aspects Started Late

Tencent itself started late in e-commerce platforms and artificial intelligence. In 2014, Tencent and JD.com cooperated on e-commerce platforms. Alibaba Cloud established a cloud computing company in 2009 and began to provide cloud computing services on a large scale in 2011. Therefore, Alibaba Cloud's business technology in cloud services, especially e-commerce platforms, is stronger than Tencent Cloud. Similarly, Baidu AI Cloud is a leader in smart cities and autonomous driving, and Huawei Cloud is a leader in government services. Tencent Cloud's cloud service technology accumulation in these areas is not as rich as these platforms. The development of cloud services depends on the hardware and user needs. The network upgrade speed is very fast, and it is not easy for Tencent Cloud to catch up.

3.3 Opportunities

3.3.1 Development of Future PaaS and SaaS Services

In 2020, the market share of China's cloud services is 70.09% for IaaS services, 8.07% for PaaS services, and 21.85% for SaaS services [11]. IaaS rents infrastructure as a service to users, PaaS rents platform software to users as a service, and SaaS deploys software on the cloud so that users can access the network to use cloud software on any cloud terminal device. Users usually choose different services according to their actual needs. At present, PaaS and SaaS services account for a small proportion of domestic cloud services. There may be two reasons. First, the relative needs of companies and developers in related industries are not high, and basic IaaS services can meet the needs. On the other hand, the development of PaaS and SaaS services may not be perfect, and users still need to improve the operating system and access the cloud by themselves.

These two services are also businesses that cloud service providers should take the initiative to develop in the future. Leaving the unexplored market will reduce the brand status and market share. Since the services run by Tencent have certain advantages in software and cloud services, the development of SaaS and PaaS services in the future is an important opportunity for Tencent Cloud.

3.3.2 Alibaba Cloud's Market Share Gradually Declines

Alibaba Cloud's market share is declining year by year, as can be seen from Table 2, Alibaba Cloud's market share is slowly declining, Tencent Cloud's market share fluctuates slightly, but the overall market share remains around 15%, Alibaba Cloud's market share decline is related to the slowdown of the Internet industry, the emphasis on KPIs rather than R&D, and the reduction of Alibaba Cloud's R&D investment. In 2021, Huawei invested RMB 142.7 billion in R&D, Tencent invested 51.8 billion, Baidu invested 22.1 billion in the intelligent cloud, and Alibaba Cloud invested 51.4 billion. Alibaba Cloud as the cloud service platform with the highest market share R&D investment but not more than Huawei Cloud, Tencent Cloud's market share and R & D investment ratio is lower, Tencent Cloud's development of cloud services is more stable progress, and the future is likely to win more market share, more than Alibaba Cloud, the market share ratio will also increase, customers have more trust in Tencent Cloud services and operations.

3.4 Threats

3.4.1 Large Companies with a Low Market Share of Cloud Services

Table 2 shows that the total market share of cloud service providers in the "other" category has not continued to decrease, and it is difficult to completely form a "winner-takes-all" situation in the cloud service platform because of the different focus and service areas of each company, which is not quite the same as the situation in the smartphone market. This is not quite the same as the smartphone market. Among these cloud service providers with less market share, there are also big companies, such as China Telecom's cloud computing brand Tianyi Cloud, which is the fourth in the IaaS+PaaS public cloud market. Longchao Cloud is the first in the government cloud market. Jinshan Cloud is the first industry cloud for China's manufacturing industry built by Kingsoft and Anshan Steel Group [12]. Netease Digital Sail is owned by Netease Group, and Jingdong Zhilian Cloud is owned by Jingdong Group. In addition to these, there are smaller cloud providers that have sunk into small and medium-sized cities earlier. These cloud service providers have a lot of capital to invest in R&D and a large number of user groups to continuously improve their cloud services. The reason for their low market share may be that their cloud services start late or have poor marketing effects, but the basic services provided are not very different for ordinary users. If they can provide better quality cloud services in specific areas in the future, they may also be chosen by more users.

3.4.2 Development of Baidu AI Cloud

In the long run, with the construction of medium and large cities infrastructure, base stations, cloud cameras, cloud servers and other facilities can support more high-frequency and high-precision application scenarios, similar to Baidu AI Cloud focused on smart city, autonomous driving, and other

aspects of the technology may be more widely and popularly used in the city, which will help Baidu AI Cloud high-speed development and high returns. At the same time, Baidu AI Cloud in industrial quality inspection solutions market first, the future Tencent Cloud may be difficult to catch up with Baidu AI Cloud in this regard.

3.4.3 Foreign Cloud Service Providers Enter the Domestic Cloud Service Market

At present, the domestic cloud service market is still dominated by domestic companies such as Alibaba Cloud, Huawei Cloud, Tencent Cloud, and Baidu AI Cloud, and foreign cloud service providers have not been able to occupy a high market share in the country. At present, the global IaaS public cloud services market share of the higher companies are Amazon, Microsoft, Alibaba, and Google, in addition to Ali, these three companies are a large number of users worldwide and have a lot of money to invest in research and development of international companies. If these companies enter the Chinese market in the future, not only Tencent Cloud will face the threat, other domestic cloud service providers will face a certain impact.

4. Suggestions

4.1 Continuous Investment In R&D

Tencent Cloud currently has a greater advantage in the areas it specializes in, and is among the top three cloud service providers in China. It should increase its investment in R&D in its advantageous audio and video, social, gaming, and financial areas to maintain its dominant position. Because these functions are the most frequently used by both developers and ordinary users daily, companies and developers will also use such cloud services more frequently, and being able to maintain a dominant position in these areas is beneficial to retaining the existing market share. The technological improvements brought by R&D can also lay the foundation for future market share gains.

4.2 Improve Customer Experience

At present, the charges of each cloud service platform are explicitly priced services and various preferential activities, and the prices and charges are relatively uniform on the whole. If Tencent Cloud can lower the price of low-grade basic services and increase bandwidth, usage times, and free experience hours, customers will be more willing to choose Tencent Cloud, and Tencent Cloud's technical accumulation can also bring customers a better cloud service experience and enhance user stickiness.

4.3 Better Adaptation To Local User Needs

As mentioned in the threat, the current domestic cloud service market is still the competition of domestic cloud service providers, without the participation of foreign cloud service providers, but foreign cloud service providers have more users, sufficient funds, and strong technology, and all have strong competitiveness in the international cloud service market. Therefore, in order to cope with the possible impact of foreign cloud service providers entering the country in the future, Tencent Cloud should make use of its existing advantages, strive to create localized cloud services and make cloud services that better meet the needs of domestic users. Foreign companies entering the country have to go through the process of localization. Domestic companies understand better the needs, habits, and purposes of domestic users, and only by better meeting the needs of users can they increase user stickiness and better resist the impact of foreign cloud service providers entering the country.

5. Conclusion

Through reading the data and reports of relevant statistical companies in recent years, this paper has been given a lot of inspiration. In the process of research, this paper found that Alibaba Cloud as the domestic market share of the first cloud service provider has failed to effectively stabilize and

grow its market share. The domestic cloud service market currently shows super many strong trends, but Alibaba Cloud continued market share slowly declining state may prompt the low market share but belong to the company's strong cloud service providers to ascend, such as Tianyi cloud, Jinshan cloud, Jingdong cloud, etc., the formation of The situation of "many strong". Tencent Cloud and Huawei Cloud market share are in the slow rise stage. They need to continue to invest heavily in research and development to keep cloud technology at the forefront while improving the user experience and increasing user engagement. It can help them in future competition to better resist emerging cloud service providers and foreign cloud service providers.

In the cloud service market is difficult to achieve complete winner-take-all because the development of cloud services and accumulation of experience is fast, each cloud service providers have its areas of expertise. As the service more and more people, the accumulated experience will also be not good cloud service providers more and more difficult to surpass.

At present, cloud services due to the impact of the server, network, maintenance, completely, etc., in the future for a while will still be a professional tool attributes of strong services, its fees, the use of less innovation, more traditional, cloud service providers in addition to improving the quality of cloud services, in the professional field of unremitting investment, research, and development should also be in the fees, the use of experience to carry out certain innovations. Cloud services may also be like personal computers and become popular. The early fight for consumers will provide great help to cloud service providers to survive and stabilize the market.

References

- [1] Amazon Web Services. Announcing Amazon Elastic Compute Cloud (Amazon EC2) - beta. 2006, <https://aws.amazon.com/cn/about-aws/whats-new/2006/08/24/announcing-amazon-elastic-compute-cloud-amazon-ec2---beta/>
- [2] Hanghangcha. The Evolution of Cloud Computing. 2020, <https://zhuanlan.zhihu.com/p/304499147>
- [3] Xiaojian Zhu. Exploring China's cloud computing business model from the cloud computing industry chain. Economic Perspective, 2011, 09-61-04
- [4] Wenhong Chen. Now I Know my ABCs: U.S.-China Policy on AI, Big Data, and Cloud Computing. East-West Center, 2019
- [5] Feng Jin. Why did Canton Fair choose Tencent Cloud?. Communication World, 2020, 11:10
- [6] Xinlu Yao. Alibaba cloud, Tencent cloud outside, who is the "third cloud"?. 2020. <https://awtmt.com/articles/3589857>
- [7] Canalys. Cloud services spend in China hits US\$7.3 billion in Q1 2022. 2022, <https://www.canalys.com/newsroom/china-cloud-market-Q1-2022>
- [8] Tencent Cloud. Tencent Cloud Pricing. 2022, <https://buy.cloud.tencent.com/pricing>
- [9] Statista Survey. Tech Giants and Digital Services in Mainland China 2019. 2019, <https://www.statista.com/study/61717/tech-giants-and-digital-services-in-mainland-china/>
- [10] Slotta D. Quarterly share of the cloud Infrastructure as a service (IaaS) market in China from 4th quarter 2019 to 3rd quarter 2021, by company. 2022, <https://www.statista.com/statistics/1129265/china-cloud-infrastructure-service-market-share-by-company/>
- [11] Statista. Cloud computing in China. 2021, <https://www.statista.com/study/65396/cloud-services-industry-in-china/>
- [12] Mo-Tian-Lun Editorial Department. Complete List of Cloud Service Vendors in China in 2022. 2022, <https://www.modb.pro/db/422707>