

**BOOM AND BUST OF BIKE SHARING INDUSTRY IN
CHINA
-A CASE STUDY OF ofo**

Xie Jingcheng (Philip)

Dissertation submitted as partial requirement for the conferral of

Master in Business Administration

Supervisor:

Prof. Pedro Fontes Falcão, ISCTE Business School, Departamento de
Marketing, Operações e Gestão Geral (DMOG)

January 2019

BOOM AND BUST OF BIKE SHARING INDUSTRY IN CHINA
-A CASE STUDY OF ofo
XieJingcheng (Philip)

ACKNOWLEDGEMENT

I would like to take this opportunity to thank a number of people who have offered invaluable assistance in the preparation of my dissertation.

My deepest gratitude goes first and foremost to Professor Pedro Fontes Falcão , my supervisor, who has walked me through all the stages of the writing this project. Their constant support and guidance have greatly enlightened me not only on the academic pursuit but also on the morals of being a man.

Secondly, I would like to sincerely thank all the professors and teachers whose insightful lectures have well prepared me for the completion of the thesis during my pursuit of the Master Degree of Science at ISCTE-IUL.

Last, I am deeply thank to my dear parents, friends and my girlfriend, who always stand by me, willingly to help me complete the questionnaire and offered some valuable insights. Without their encouragement and support, I could not finished this thesis.

INDEX

Summary	7
Chapter 1 Boom and bust of bike sharing in China	9
1.1 Introduction	9
1.2 Background.....	9
1.3 The development history of China's shared bicycle industry	10
1.4 The characteristics of shared bicycle industry	12
1.5 The development status of China's shared bicycle industry	13
1.5.1 China's shared bicycle industry competition status.....	13
1.5.2 China's shared bicycle industry chain.....	16
1.5.3 Shared bicycle main business mode	17
1.5.4 China's shared bicycle cost-income analysis	18
Chapter 2 Shared bike ofo	21
2.1 Introduction of ofo.....	21
2.2 Ofo's value and innovation.....	22
2.3 Ofo's way of profiting.....	24
2.4 Existing risks of ofo.....	26
Chapter 3 Pedagogical Note	29
3.1 Research questions.....	29
3.2 The case's target audience	29
3.3 Educational objectives	29
3.4 Literature review.....	30
3.4.1 Concept of sharing economy	30
3.4.2 Concept of business model	31
3.4.3 Consumer level	33
3.4.4 Enterprise information level	33
3.4.5 Advantage level	34
3.5 Methodology.....	34
3.5.1 Research paradigm – Mixed Research.....	34
3.5.2 Methodological approach and methods	35
3.5.3 Data collection and analysis	35
3.5.4 Limitations	35
3.6 Theories framework.....	36
3.6.1 PEST analysis model	36
3.6.2 Porter's five Force Model.....	36
3.6.3 SWOT analysis model	38
3.6.4 Sensitivity analysis	38
Chapter 4 Analysis Results	39
4.1 Pest analysis.....	39
4.2 Porter's five forces model.....	42
4.3 SWOT analysis	45

4.4 Sensitivity analysis:	48
Chapter 5 Conclusion and suggestion	53
5.1 Conclusion	53
5.2 Suggestions	54
References:	57
Appendix:	59

Table index:

Table 1 China's shared bicycle development stage.....	11
Table 2 User scale of different shared bicycle brands	14
Table 3 Mainstream brand sharing bicycle business model	18
Table 4 China's shared bicycle cost-income analysis.....	21
Table 5 Ofo's cycling body advertising project.....	25
Table 6 Ofo's financing history	25
Table 7 2016 congestion index of major Chinese cities	41
Table 8 Porter's five forces model.....	45
Table 9 Ofo's profitability model	50
Table 10 Sensitivity analysis results	51

Figure index:

Figure 1 Share bicycle industry scale.....	10
Figure 2 Distribution of shared bicycle cities in January-May 2018.....	15
Figure 3 Urban distribution of mainstream shared bicycle brands in 2018.....	15
Figure 4 China's shared bicycle industry chain	17
Figure 5 the ofo yellow bike	23
Figure 6 Sharing economy model	31
Figure 7 The average daily pollutant concentration in Beijing reached the standard in 2016 (Days) ...	40
Figure 8 SWOT analysis	47

Summary

From 2016 to the first half of 2017, shared bicycles experienced explosive growth in China, rapidly spreading from first- and second-tier cities to third- and fourth-tier cities, and even began to expand to some foreign cities. The advancement of Internet technology, the popularity of new consumption habits, and the large population size have provided the basic conditions for the development of the sharing economy. The sharing of bicycles as a pioneer of the sharing economy came into being. Sharing bicycles as a new force to solve “the last mile” problem of urban traffic has great significance. However, in the second half of 2017, after the feast of capital, the shared bicycles quickly entered the stage of a big reshuffle. The exposure of the weakness of the shared bike platform’s profit model made the shared bicycle companies closures always appear in the newspapers, and the whole industry fell into a cold winter. The article will take a series of dynamic industrial analysis tool like PEST, Michael Porter's Five Forces Model to give a clear framework of sharing bike industry. In addition, SWOT and Sensitive analysis have been used in the select company “ofo” to dissect the real situation they are facing. It is found from the results that the existing risks of ofo bicycle platform mainly include social, legal, financial and strategical aspects. Therefore, it is necessary to construct a risk and profit guarantee mechanism from the perspective of government and platform.

Resumo

De 2016 até o primeiro semestre de 2017, as bicicletas compartilhadas tiveram um crescimento explosivo na China, espalhando-se rapidamente de cidades de primeiro e segundo níveis para cidades de terceiro e quarto níveis, e até começaram a se expandir para algumas cidades estrangeiras. O avanço da tecnologia da Internet, a popularidade de novos hábitos de consumo e o grande tamanho da população proporcionaram as condições básicas para o desenvolvimento da economia compartilhada. O compartilhamento de bicicletas como um pioneiro da economia compartilhada surgiu. Compartilhar bicicletas como uma nova força para resolver o problema da "última milha" do tráfego urbano tem um grande significado. No entanto, no segundo semestre de 2017, após a festa da capital, as bicicletas compartilhadas rapidamente entraram no palco de uma grande remodelação. A exposição da fraqueza do modelo de lucro da plataforma de bicicleta compartilhada fez com que os fechamentos de empresas de bicicletas compartilhadas aparecessem sempre nos jornais, e toda a indústria caiu em um inverno frio. O artigo levará uma série de ferramentas dinâmicas de análise industrial, como a PEST, o Five Forces Model, de Michael Porter, para fornecer uma estrutura clara de compartilhamento da indústria de bicicletas. Além disso, análises SWOT e Sensitive foram usadas na empresa escolhida "ofo" para dissecar a situação real que estão enfrentando. Verifica-se a partir dos resultados que os riscos existentes da plataforma ofo bicycle incluem principalmente aspectos sociais, legais, financeiros e estratégicos. Portanto, é necessário construir um mecanismo de garantia de risco e lucro na perspectiva do governo e da plataforma.

Chapter 1 Boom and bust of bike sharing in China

1.1 Introduction

Ofo, the world's first pile-less shared bicycle travel platform and a leader in the domestic shared cycling industry. Since its launch in June 2015, ofo has launched more than 10 million shared bicycles worldwide. However, since the past half of 2017, many small and medium-sized shared bicycle companies have closed down, now ofo also deeply troubled by bicycle failures, difficulties in refunding deposits, and debt crisis. This case combines the state of the shared bicycle industry with the risk and profit model faced by ofo, trying to solve these problems from the perspective of government and platform.

1.2 Background

In recent years, China's sharing economy has developed rapidly, covering transportation, living services, knowledge and skills, etc. Among them, the rapid development of online car-hailing service and shared bicycles service has become an extremely important tool on residents' lives. Sharing bicycles is not only effective in solving the pain points of the “last mile” of urban traffic, but also helps to alleviate traffic congestion and environmental pollution problems. It has become an important part of the urban transportation system.

Since 2000, the popularity of cars has led to the gradual decline of bicycles in the original "biking kingdom"- China. The rise of shared bicycles has triggered a strong return of bicycles in China. After the emergence of shared bicycles, the proportion of bicycle travel in China has increased from 5.5% to 11.6%, while the number of trips by cars has decreased by 55%.¹The explosive development of shared bicycles in China inextricably linked with China's economic foundation, social development and the “green” and “shared” development model advocated by Chinese government.

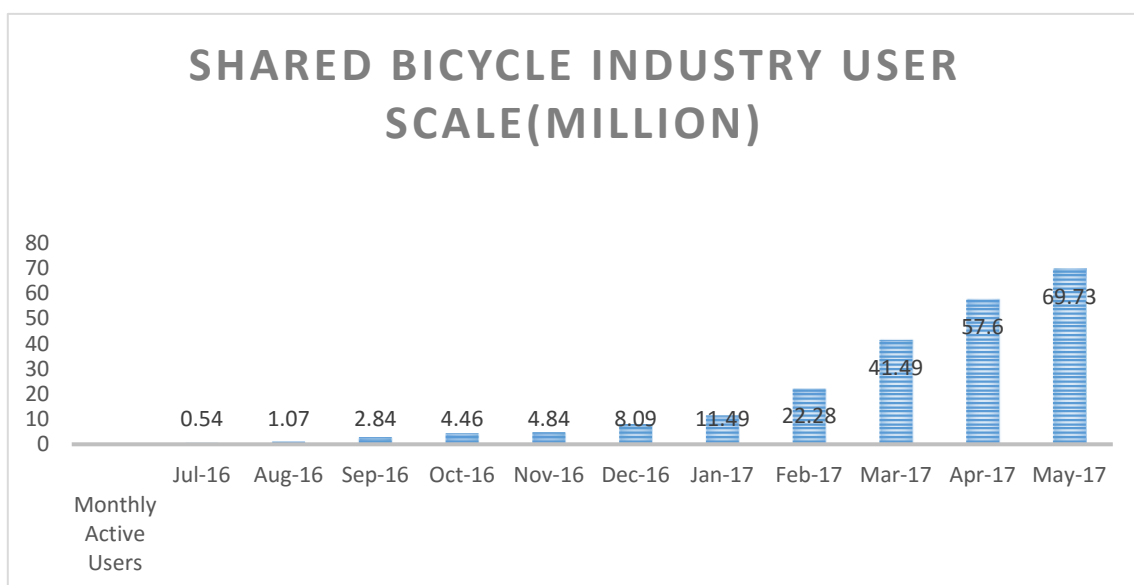
¹ Source: 2017 Sharing Bike and Urban Development White Paper

1.3 The development history of China's shared bicycle industry

The shared bicycle first originated in the Netherlands in 1965, and the first “systematic” public bicycles began to appear in Copenhagen in 1995. In 2007, “Velib” in Paris, France, appeared the world's first truly commercial shared bicycle company. The development of shared bicycles in China was relatively late. In 2007, public bicycles invested by the government began to appear. Properly speaking, shared bicycles began to appear in 2015, but with the support of the popularization of smartphones and the development of Internet of Things technology (IoT), the sharing economic has developed rapidly and now has been in the leading position in the world. China's shared bicycle brands have also occupied in some major overseas cities.

Since the second half of 2016, shared bicycles has gradually entered the Chinese market, and the scale of users has shown a geometric high-speed growth. By January 2017, the number of monthly active users exceeded 10 million, and in May it was close to 70 million, with a compound monthly growth rate of 62.6% (Figure1). By 2018, it gradually stabilize at 93 million (Zhangxin, 2018).The distribution of shared bicycles has gradually spread from first-tier cities such as Beijing, Shanghai and Guangzhou to second- and third-tier cities across China.

Figure 1 Share bicycle industry scale



Source: QuestMobile

Since the introduction of public bicycles in 2007, the development of shared bicycles in China has gone through three stages (Table1).

Table 1 China's shared bicycle development stage

	The first stage	The second stage	The third phase
Investment subject	Government	Government investment enterprise contracting	Market capital
Bicycle mode	Piled	Piled	Pile-less
Launch city	Beijing, Hangzhou, Wuhan, etc.	Large, medium and small cities	Large, medium and small cities, some overseas cities

(1) The first stage: the introduction of urban public bicycles in pilot cities

In 2007, the public bicycle model that started from abroad began to be introduced into China. The main mode was government-led and became part of the urban public transportation system. Most of the bicycles were piled bicycles. In the initial stage of public bicycles, they are usually deployed and built in cities. The government invests in the construction of bicycle piles and power supply systems. Relevant enterprises provide service of production, operation and maintenance of public bicycles in the form of tenders, and urban residents rely on their identities, certificate and deposit (or not) to apply the transportation card for the use of these bicycles. In the process of using public bicycles, it is basically free of charge (or time-out deduction), and public bicycles as a public product invested by the government become part of the urban public transportation system. The city that started to launch public bicycles in China was Beijing, and then cities such as Hangzhou and Wuhan began to pilot.

(2) The second stage: urban public bicycles are carried out nationwide

After 2010, the public bicycle system supplier represented by Yonganxing cooperated with the government to contract the investment and operation of public bicycles. The public bicycles were basically piled bicycles. With the increase in the coverage of urban bicycles, the manufacturers and operators of public bicycle systems began to appear. They provided products and services to the government from a series of R&D, design, manufacturing and installation integration of public bicycles. So far, more than 200 cities (counties) have been equipped with local public bicycle system. However, the comprehensive cost of bicycle parking is too high, the actual scale of actual delivery is too low, the use of bicycles in some cities is too low, which has called in question about the social

and economic benefits of urban public bicycles.

(3) The third stage: the high-speed rise of pile-free shared bicycles

After 2014, the sharing of bicycle companies led by ofo and Mobike developed rapidly. In the context of the increase in the number of smartphones, mobile Internet users and the development of Internet of Things technologies, the more convenient access pile-free bicycles has exploded. The growth began to gradually replace the pile of bicycles. Since 2015, the leading shared bicycle brands ofo and Mobike have begun to emerge, attracting a large amount of investment in social capital, and showing a trend of intensive financing and increased capital. In June and July 2017, Mobike and ofo received a new round of financing of US\$600 million and US\$700 million respectively. According to incomplete statistics, the financing scale of these two companies exceeded \$1.7 billion until July 2017. At this stage, the government mainly assumes the responsibility of supervision and management, and strengthens the management of shared bicycles through the total amount of bicycles in the city, parking lot setting, deposit management, and credit information management.

1.4 The characteristics of shared bicycle industry

It can be seen from the development history and characteristics of shared bicycles industry in China that the transformation of investment entities and the continuous spread of cities are the most important development.

First, the investment subject of shared bicycles has shifted from the government to the market. Shared bicycles, which share economic goods, gradually replace public bicycles as public goods. The favorite of capital and market for shared bicycles indicates that China's sharing economy is in a period of rapid development and the consumption concept has changed from the "ownership" to "use right".

Secondly, the shared bicycles are infiltrated from the first- and second-tier cities to the third- and fourth-tier cities. From the perspective of the development of regional spatial distribution of shared bicycles, the level of urban economic development, urban population density and the quality of residents are the main considerations for the sharing of bicycles. The initial launch of each shared bicycle is generally concentrated in first-tier cities such as Beijing, Shanghai, Shenzhen, etc. The

higher the economic development level of the city, the greater the demand for private car travel and public transportation, and thus the problem of urban traffic congestion and environmental pollution is getting more serious, and urban residents are even more urgent about solving the “last mile of the city”. The population density of a city is a key factor that directly affects the number of users and effective utilization rate of shared bicycle units. High-traffic residents have a higher taste for the “Internet plus sharing economy model” and are more likely to try or accept new consumption brought by shared bicycles experience. The most representative example is the delivery strategy of ofo, which uses the campus to encircle city. Through the sharing of bicycles on campus, it attracts college students as the initial users. As the fastest-accepting group for new things, college students quickly establish a large number of user size. At the same time, the campus-wide management is relatively convenient, and the quality of users is generally high, which guarantees the safety of bicycles and the smooth development of the previous operations.

However, as the competition in the shared bicycle industry continues to intensify, first- and second-tier cities are gradually saturated. Beijing and Shanghai have also introduced relevant policies that stipulate the number of bicycles placed in the city. In order to further expand the market, related brands began to launch in third- and fourth-tier cities. However, a large number of third- and fourth-tier cities in China have more complex demand models. Population size, topography, climate and government public bicycles all affect the demand for shared bicycles. This put higher requirements for shared bicycle companies to generate a rational expansion strategy in such fierce competition.

1.5 The development status of China's shared bicycle industry

1.5.1 China's shared bicycle industry competition status

In 2016, there were more than 30 shared bicycle brands in China, including Mobike, Yonganxing, Zhixiang, Perking public bicycle, Qidian, Qiqi, CCbike, 7hao, Heiniaio, Hellobike, Youyou, Qibei, Xiongmao, Yun, Ofo, Youbai, DiandianGO, Xiaolu, Xiaobai, Kuaitu, Lvyou etc. But so far, the Wukong, 3Vbike, Dingding, Shandian, DDbike, Xiaolan, Xiaoming etc. that has closed down because of poor management or capital shortage.

At present, China's Shared bicycle market presents the first echelon with Mobike and ofo cycling leading, and the second echelon with Hellobike cycling. Up to May 2017, the user scale of each

enterprise is shown in (Table2.)

Table 2 User scale of different shared bicycle brands

Shared bike brand	User scale(million)	Cities put in
Ofo	37.7	Shanghai, Beijing, Guangzhou, Shenzhen, Chengdu and other domestic and overseas cities
Mobike	34.54	Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Nanjing and other domestic cities and Singapore
Kuqi ²	4.505	Beijing, Tianjin, Xi 'An, Zhengzhou, Luoyang and other cities
Xiaolan ³	4.37	Shenzhen, Guangzhou, Chengdu, Nanjing, Foshan, San Francisco, Beijing and other cities
Hellobike ⁴	3.1	Hangzhou, Ningbo, Fuzhou, Xiamen, Tianjin, Harbin and other cities
Yonganxing	2.408	Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu and more than 100 other cities in China
Xiaoming ⁵	0.796	Shanghai, Guangzhou, Shenzhen, Wuxi, Hangzhou
Youbai ⁶	0.728	Dongguan, Foshan, Huizhou, Zhuhai, Guangzhou, Shenzhen, Shantou, Wuxi, Nanchang and other cities

Source: QuestMobile

From a geographical distribution point of view Figure2, users are mainly distributed in first-tier and second-tier cities, account for 70%. Among them, Mobike and ofo account for more than 70% in first-tier and second-tier cities, while Hellobike only occupies 5% (Figure3) in first-tier cities.

² Bankrupt in 2018

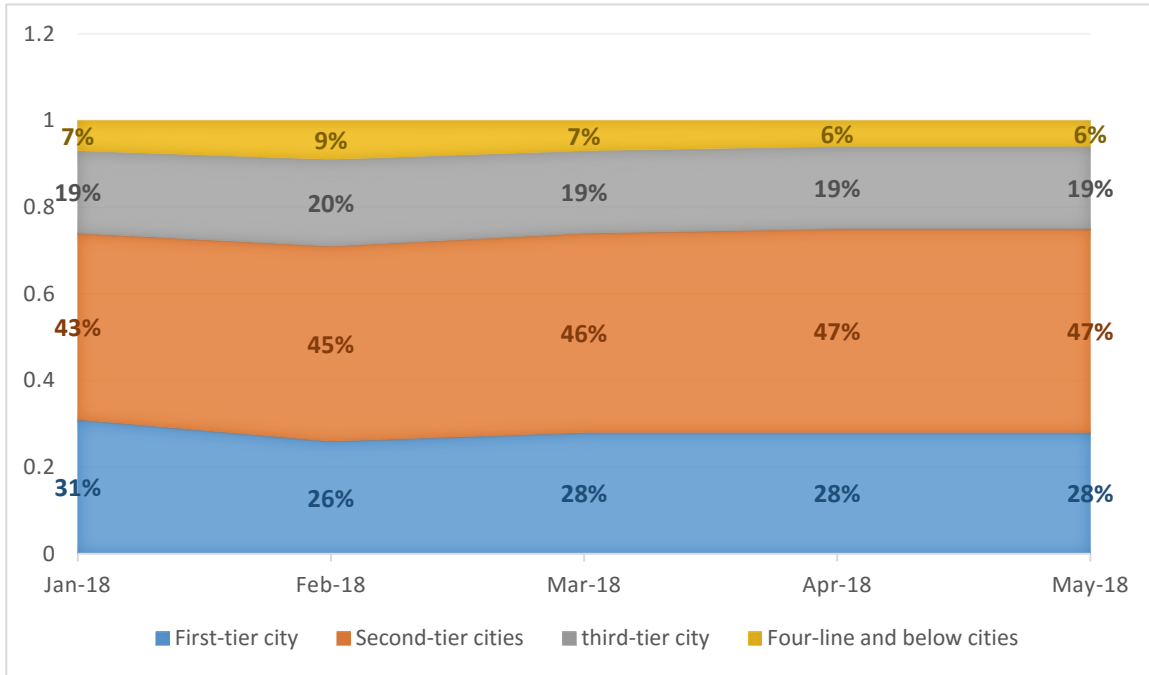
³ Bankrupt in 2018

⁴ Merged with Yonganxing

⁵ Bankrupt in 2018

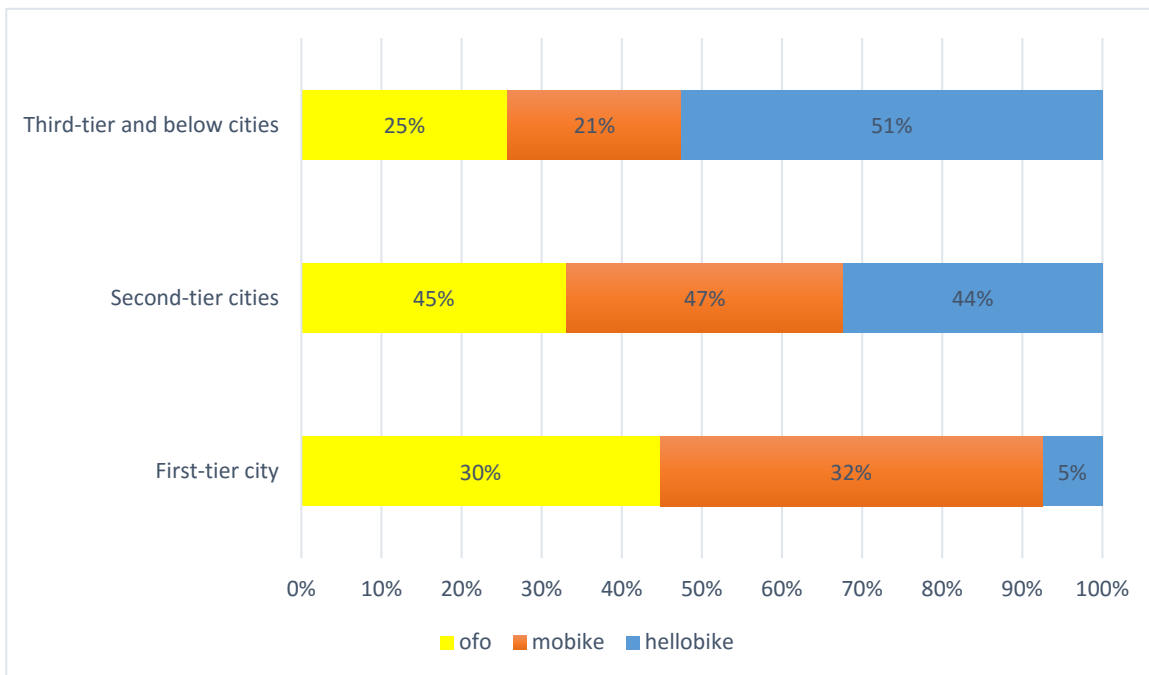
⁶ Bankrupt in 2018

Figure 2 Distribution of shared bicycle cities in January-May 2018



Source: Trustdata

Figure 3 Urban distribution of mainstream shared bicycle brands in 2018



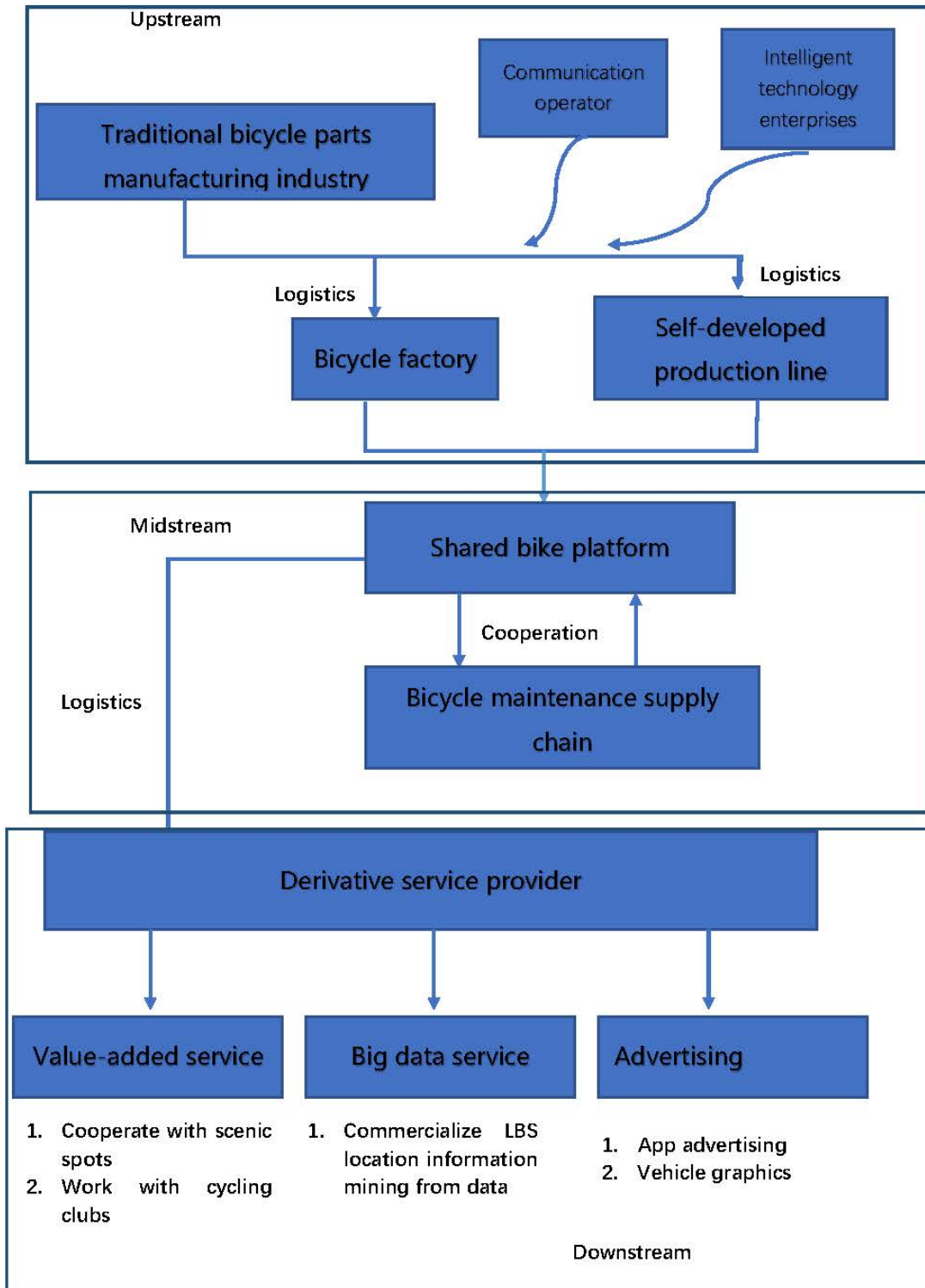
Source: Trustdata

From the distribution of various brands, there are fewer bicycle brands covering the major cities in the country, and the industry concentration is higher. Among the bicycle brands, the Mobike bicycle and the ofo bicycle cover the widest.

1.5.2 China's shared bicycle industry chain

In China's increasingly mature shared bicycle industry chain (Figure4), it is mainly divided into three parts. The upstream supplier becomes the key, which measures the mass production capacity and the iteration speed of the enterprise. These suppliers include traditional bicycle parts manufacturers such as Fujitec, Feige, Fenghuang, and Kailushi; including technology companies that provide smart devices, such as Huawei, Xiaomi and Ericsson; Communication carriers, such as China Mobile, China Unicom, China Telecom, etc. The other is the self-developed production line. The middle of the shared bicycle supply chain is the major shared bicycle companies, and the downstream is the provider of derivative services, such as cooperation with attractions to provide biking tour for tourists; Cooperation with cycling clubs to provide customized bicycles for cycling enthusiasts. ; Provide big data services and co-operators of advertising, etc. The problems brought about by the logistics connection process and the most suitable profit model for downstream still need to be explored; In the expansion of the profit model, it is necessary to carefully consider the feasibility of the business model. For example, the advertising of the body will affect the appearance of the city, and the cooperation with the attraction/ride club will face similar problems such as the small size of the user.

Figure 4 China's shared bicycle industry chain



1.5.3 Shared bicycle main business mode

The usual registration method for all kinds of shared bicycles is “real name authentication + mobile

phone binding + deposit”. Among them, the Mobike bicycle deposits are higher, is 299 yuan (\$US44.30), ofo and Hellobike bicycle are the same 199 yuan (\$US29.48). Other brands are 99 yuan (\$US14.67). The deposit cannot be used, the usage fee needs to be recharged, and the price is maintained at 0.5~1 yuan (\$US 0.074~0.15)/0.5 hours (Table3). Among all kinds of bicycles, Mobike bicycles adopt their own design and manufacturing methods. The whole bike has a strong sense of technology. Without external chains and solid tire design, the bicycle damage rate is low.

Table 3 Mainstream brand sharing bicycle business model

	Mobike	ofo	Hellobike
Deposit	299yuan(\$US44.30)	199yuan(\$US29.48)	199yuan(\$US29.48)
Charge standard	Classic:1yuan/ half hour Lite:0.5yuan/half hour	City:1yuan/ hour Campus:0.5yuan/ hour	1yuan/half hour Midnight for free
Drive mode	Shaft drive/chain drive	chain drive	chain drive
Weight	Classic: ≈22kg Lite: ≈15kg	≈15kg	≈15kg
Safety lock	Gps smart lock	Manual password lock/ Gps smart lock	Gps smart lock
Tire	Explosion-proof tire	Ordinary tire/ Explosion-proof tire	Explosion-proof tire
Usage mode	Free parking in the rule area	Free parking in the rule area	Free parking in the rule area
Means of payments	App/Wechat	App/Alipay	App/Alipay
The deposit regulation	Information not public	Bank-specific regulatory account	Information not public
Launch city	Mainly First and second tier cities	Mainly First and second tier cities	Mainly Second and third tier cities

1.5.4 China's shared bicycle cost-income analysis

The difference between shared bicycle and online car-hailing service is that the business model is B2C mode, and shared by multiple users to achieve a sharing economy. China's shared bicycle industry cost-income analysis is shown in Table4.

Cost: mainly includes the manufacturing cost of bicycles, operation and maintenance costs, advertising investment, etc.

There is a certain gap in the manufacturing costs of shared bicycles. According to public information, the production cost of the Mobike bicycle is about 2,000-3000 yuan (\$US296.30~444.44), while the production cost of the ofo shared bicycle is about 300-500 yuan (\$US44.44~74.07). Other brands, such as Hellobike are generally costing within 1,000 yuan (\$US148.15). The cost of the body, tires, chains, and locks varies, and the cost of bicycles varies. Smart hardware such as embedded chips, GPS modules, SIM cards and solar panels are also important aspects of sharing bicycle costs. In general, the bicycle cost has a negative correlation with the damage rate in use. The high-end body material and the high technological content of the equipment make the damage rate of the Mobike bicycle far lower than the ofo's. According to Tencent technology research, the proportion of ofo and Mobike bicycle users reporting vehicle failures was 39.3% and 26.2%, respectively. (Fengchen, 2017)

The operating and maintenance costs of a shared bicycle involve multiple dimensions. The cost of the research and development phase mainly includes the procurement of spare parts and the cost of technology research and development. In the operation stage, due to the use of smart locks, etc., network charges involving communication operators are generated. In terms of maintenance and protection, the current shared bicycle companies mainly carry out the methods of big data supervision, manual dispatching of bikes and regional distribution of maintenance workers, which will generate replacement repair costs, labor cost, transportation fee and other expenses. After all, shared bicycle is not like car-hailing service, which is possible to find a user through the driver. If no one ride this bicycle, it can't generate new profits, so it needs manual intervention. In addition, Beijing and Shanghai's governments launched the "Shared Bicycle System Technology and Service Specification" and "Shared Bicycle Service Specification" respectively in 2018, which require shared bicycles companies to equip with maintenance personnel and dispatch personnel in proportion to the total number of bikes invested: not less than 5%. According to the number of Mobike and ofo in the country of 4.5 million and 5 million, the two shared bicycle companies need to configure 22,500 offline employees and 25,000 people. (May 2017) It is not difficult to see that maintenance costs are becoming an important module influencing the cost of shared bicycle companies.

In addition, in the pre-development of shared bicycles, in order to improve the market competitiveness of shared bicycles, promote brand concepts, and cultivate user habits, it requires a large amount of advertising and market research inputs, such as celebrity endorsement promotion,

online and offline advertising. .

Revenue: including rental income, advertising revenue from advertisers, deposit income, big data marketing, etc.

The rent of a shared bicycle is the cost of renting a bicycle by the user. In fact, the rental price of the shared bicycle is priced according to the time-sharing lease. In the current business situation, the shared bicycle industry has not yet entered a profit period, although some shared bicycle companies founders claim to be profitable by the end of 2018. But to attract users to expand the market and increase customer stickiness, a large number of free rides, low discounted month cards make the rental income of shared bicycles limited. Therefore, only by continuously expanding the scale of user and stabilizing the consumer's consumption needs and habits, the pre-investment through rent can bring profit.

Deposit is considered to be the invisible and most important profit model for shared bicycle companies. The deposit for shared bicycles is a guaranteed amount that users need to pay before using shared bicycles. The purpose is to ensure that bicycle rental users use bicycles properly and reasonably. In the case of bicycle damage, priority is given to “compensation”. Before using a shared bicycle, the user needs to pay a certain amount of deposit in order to obtain the qualification to use the shared bicycle, and pay the corresponding rental fee each time. The deposit actually has a certain amount of raised funds or interest-free financing. The deposits for different shared bicycles are different and independent of each other. The deposit of ofo is 199 yuan, while the deposit of Mobike is 299 yuan. According to the scale of registered users of more than 28 million, the deposits of the two companies are respectively 6 billion yuan (\$US 0.89 billion) and more than 10 billion yuan (\$US 1.48 billion). As a huge interest-free fund, each shared bicycle platform does not give a specific explanation for the whereabouts of the deposit. With such large-scale funds, only bank interest can already provide a lot of income for the shared bicycle platform, and further investment benefits are still a large amount of profit.

In the era of mobile Internet, the economic effects of big data have become increasingly prominent. Sharing bicycles through the Internet of Things, through large-scale mass-link users, has mastered a

large amount of riding data, through the collection and management of massive data, cooperate with government and other companies, which can also bring certain economic benefits to the shared bicycle companies. In addition, the shared bicycle app is also one of its revenues by working with advertisers to place ads and activities on the software interface.

Table 4 China's shared bicycle cost-income analysis

	Classification	Detail
Cost	Bicycle manufacturing cost	Body, tire, chain, built-in GPS, lock (electronic or mechanical), solar panel
	Operation and maintain cost	Maintenance costs, operating staff salaries, Communication fee, R&D cost
	Advertising spending	Celebrity endorsement, online and offline advertising
Revenue	Rental income	Single use of rental, monthly card, season card
	Advertising revenue	App opening ad slot, offline store or e-commerce information portal
	Deposit	Deposit pool fund management
	Big Data Marketing	Collect and manage short-distance data

Chapter 2 Shared bike ofo

2.1 Introduction of ofo

The China Sharing Economic Development Report 2018 indicates that the development of shared bicycles is the fastest in 2017; the “Statistical Report on the Development of China's Internet Network” shows that by the end of 2017, the number of domestic users of shared bicycles has reached 221 million, accounting for 28.6% of the total netizens. It can be seen that it is representative and feasible to study the shared economic business model with shared bicycle as a breakthrough. The reason for choosing the ofo in this case is that it has always been a typical representative of the shared bicycle industry. The early ofo and Mobike were pioneer; today, the shared bicycle industry experienced a

capital cleansing, showing a three-legged situation, ofo as the only independent bicycle company, and the Mobike acquired by Meituan and Hellobike merged with Yonganxing.

Ofo, the world's first non-pile shared bicycle travel platform and a leader in the domestic shared bicycle industry. Since its launch in June 2015, ofo has launched more than 10 million shared bicycles worldwide, with more than 32 million daily orders. It has provided more than 6 billion highly efficient green trips to 20 countries around the world (of0, 2019), and has been rated as China's "New Four Major Inventions" by foreign youths and CCTV(China Central Television). When the shared bicycle industry was just launched in 2015, many bicycle operating platforms entered the market. Ofo and Mobike relied on financing to obtain nearly 90% of the market, many small and medium-sized shared bicycle companies went broke. However, after ofo and Mobike became industry leaders, they did not find a suitable way to make money.

2.2 Ofo's value and innovation

When ofo founder Daiwei decided to turn ofo into the shared bike business, he turned to the world and announced his vision: "Not to produce bicycles, only to connect bicycles". At the beginning when ofo entered the campus, Daiwei proposed to build a platform to collect bicycles in a shared way. This means that if students share their bicycles, they can hand them over to ofo platform, and ofo will modified and put these bikes back to the market for everyone. Students who contribute their bike will have the right to ride ofo bike for free for life.

The modification process is mainly to put the license plate on the bicycle, set the lock, paint, and complete a series of assembly tasks before putting them on the campus. It can be seen from this that ofo's bike does not have as many technical features as Mobike, it is an ordinary bicycle. But compared to Mobike, its manufacture cost is much smaller.

Figure 5 the ofo yellow bike



With the vision of “ordinary” and “connected”, ofo initially equipped their bicycles with “ordinary” mechanical locks, although they were equipped with smart locks on the new models. Ofo uses this kind of ordinary bicycle, which makes the user feel very similar to the traditional bicycle riding experience. The ofo bike is light, compact, and it is comfortable to ride. Especially for women, ofo's effortless riding is very attractive to them. (Figure 5)

Compared with the model of the self-built factory in Mobike, ofo combine most of bicycle factory across the country to carry out procurement and production, which is a light asset strategy. Now, ofo has already received from upstream suppliers, such as Fenghuang, Yongjiu, Fushida, which can even reach 17.8 million units per year. Together with bikes obtained from other sources, there is no problem for ofo meets the growing demand of users. In order to control the supply chain, ofo even signed an exclusive agreement with many upstream companies to enable them to produce bicycles for themselves, rather than to cooperate with other companies. Due to the different regions in which the major bicycle manufacturers are located, ofo has also been able to establish a point-to-point supply chain coordination system with the factory, and gradually integrate with the global supply chain enterprises to realize the breadth of their supply chain.

2.3 Ofo's way of profiting

After experiencing the emergence of 2015, the capital expansion in 2016 and the capital purge of 2017. At the beginning of 2018, ofo and Mobike finally recovered the monthly card charges, ending the price subsidy war.

(1) Brand effect

Ofo began to develop from the campus, quickly build a reputation among high-density student groups, and get a great scale of users. Taking the campus as the first market to capture. The use of the semi-enclosed environment of the campus to take advantage of the low loss rate and ease of management, the formation of user density and word-of-mouth influence in the campus market.

(2) Deposit and rental income

For the cost of a single ride, the charging standard for ofo is 1 yuan (\$US 0.15) per hour for social users, 0.5 yuan (\$US 0.074) per hour for cooperative schools and teachers which is cheaper than their competitor Mobike for 1 yuan/ half hour. However, due to the large number of competitors in the industry, the user's stickiness is not high, the average number of rides per day is not much, and the single-use fee is also low. Therefore, it is relatively slow to recover the cost by relying on rental income. From the perspective of the deposit, ofo will charge a deposit of 199 yuan (originally 99 yuan) before the ride. The deposit will not be refunded automatically and will be refunded in real time after the user applies. From a convenient point of view, it is not possible for the user to apply for a refund of the deposit every time after riding, and then deposit the next time. In terms of the platform, a huge pool of funds has been formed. After the bicycle company appropriately increases the number of bikes placed, it can increase the registered users and deposits, which is essentially the nature of interest-free financing.

(3) Advertisement income

In terms of App, ofo cooperates with a variety of companies through built-in advertising. The operation pages that almost every user can see in the ofo mobile app can also be used for advertising. These operation pages include: open screen, pop-up window, Bluetooth unlock page, digital password page, scan code page, timing page, riding end page, vehicle icon, car button, personal center & activity

center icon, activity center banner. In addition, SMS push after the end of the ride can also sell advertisements.

The ofo mobile app ads are billed in accordance with CPM (Thousands of People Show Charges) and CPC (Click Charges). Compared to the high-user news client-side delivery platform, the price of ofo mobile app ads is much lower. For example, in the case of open-screen dynamic advertisements, the price per 1,000 people is 120 yuan (\$US 17.8), and the price of NETEASE news is 520,000 yuan (\$US 77,037) /day.

Since 2018, even bicycle body also full of advertisements. As can be seen from Table5, ofo's comprehensive design of the body advertisement indicates that ofo hope to find a suitable profit point from the advertisement.

Table 5 Ofo’s cycling body advertising project

Advertisement form	Advertisement area(square centimetre)	Publication price (yuan/single bike /location/month)	The sales quantity of single city
Brand customized bicycle	7500	2000 (\$US 296.30)	100
Rear wheel triangle display position	940	240 (\$US 35.56)	100
Basket display area	480	20 (\$US 2.96)	100
Handlebar triangle display area	300	160 (\$US 23.70)	100
Waterproof car seat display space	200	160 (\$US 23.70)	100

Source: ofo.so

(4) Financing income

So far, ofo has gone through 10 rounds of financing (Table6), with the amount of financing reaching 15 billion yuan (\$US 2.22 billion). With these funding, ofo unlike other failed bike-sharing firms, after the fierce competition, become a leader and even expanded its business overseas.

Table 6 Ofo’s financing history

Time	Round	Capital amount
------	-------	----------------

2015	Pre-A	9 million yuan (\$US 1.33)
Feb,2016	A	25 million
April,2016	A+	10 million
Sept 2 ,2016	B	Tens of millions of dollars
Sept 26,2016	C1	Tens of millions of dollars
Oct ,2016	C	\$US 130 million
Mar ,2017	D	\$Us 450 million
Apr, 2017	E	\$Us 700 million
Mar, 2018	E2-1	\$Us 866 million

2.4 Existing risks of ofo

(1) Social risk.

Negative externalities of public resources. Shared products are similar to public goods and have negative externalities. In the area of shared bicycles, users' malicious damage to bicycles and random parking are repeated. The reason for this negative externality is that the lease relationship did not give consumers greater constraints in the early stage. The bicycle operation platform has design flaws and lacks the necessary user credit detection and real-name reporting mechanism. Taking the ofo as an example, the early generation ofo used mechanical locks, each bike had a fixed password, and the APP billing was not associated with the lock, so the QR code sometimes damaged by someone, and make it impossible for others to use. They only need to remember the password, and this is their exclusive bike. Like adding a private lock, making the shared bicycle a private possession and losing the meaning of sharing. Later, ofo adopted technical control, claiming to adopt the new Beidou smart lock and random password, and use Beidou navigation to achieve precise positioning and upgrade the bicycle. However, it is reported that the improved Beidou smart lock is not much, and the shell is easy to damage; the dynamic password is not replaced for several hours; the positioning chip is old; and the battery is not updated, it is still an unstable disposable battery.

Shared bike companies have launched too many bicycles. As the competition in the shared bicycle industry becomes more and more fierce, major platforms are scrambling to increase their volume to compete for market share. Due to the uncivilized use of shared bicycles by users, the bicycle damage

rate is high, the maintenance capability of the platform cannot keep up with the speed of bicycle damage, and the speed of placing a large number of new bicycles on the platform is greatly increased. Most shared items are faced with the problem of how to park in public places. Although the space occupied by a single shared bicycle is not large, the huge quantity and disorderly placement are not conducive to urban traffic management, which imposes a certain burden on the city.

(2) Legal Risk

Risk of information leakage. When registering ofo, the user needs real-name authentication. The personal information provided includes mobile phone number, ID number, etc. Moreover, the ofo background will also generate the usual riding path, the specific address of the homes or companies, and so on. If these privacy are leaked, it will cause some loss to the user. According to public information from the China consumers association (2018), Ofo and 47 other companies failed to meet APP privacy standards. The main problems involve: providing personal information to the public without separate notification and with the consent of the user; collecting sensitive information without clearly informing the purpose; privacy policy is the default consent or not prompted to read.

Risks to the personal safety of users. In September 2017, a boy from Shanghai under the age of 12 has been involved in a traffic accident after riding an unlocked ofo bike. According to the Traffic Law, drivers who drive bicycles on the road must be at least 12 years of age. Although teenagers under the age of 12 cannot register ofo. The early ofo users can unlock the mechanical lock with a fixed password, there may be a phenomenon in which teenagers who lack safety education can unlock this shared bike and ride it on the road. And after the accident, there is no clear legal provisions to define the division of accident liability.

Risk of the control of government. Since the second half of 2017, as a result of Shared cycling enterprises to speed up market share, a large number of bike has been delivered and failure to offline operations management. The situation of shared cycling excesses and disorderly parking place such as from public entrances, blind road, non-motor vehicle driveways, sidewalk, is very serious. The broken bicycles is seriously affected the urban traffic order and image. Governments have issued a prohibition in 12 first-tier cities including Shanghai, Shenzhen and Guangzhou, banning new Shared bikes enter the market and requiring Shared bikes enterprises to strengthen the management of

existing Shared bikes

(3) Financial risk

Debit crisis. Shanghai Fenghuang co. is the upstream supplier of ofo bicycles. On September 1, 2018, ofo was sued by its partner and bicycle manufacturer Shanghai Fenghuang enterprise co. for failing to pay more than 68 million yuan (\$US 10.07 million) in arrears, requiring it to pay more than 70 million yuan(\$US 10.37 million) in arrears and overdue default losses. (Wenqian, 2018) In December 2018, the people's court of Haidian district of Beijing issued a judgment ordering ofo to pay 8111,896.38 yuan(\$ US 1.2 million) as a service fee for the case that Kerry Datong logistics co. sued the operator of ofo, for defaulting on the service fee. (Yi xiao, 2018)

The risk of deposit pools for bicycle companies. In July 2017, Xiaoming's deposit was difficult to refund; In early August 2017, DingDing bicycles, which had been complaining about the difficulty in refunding the deposit, declared bankruptcy; In September, the third brand Kuqi bike also due to the hardship of refunding the deposit and the removal of user information, deep in collapse crisis and escape rumors. The CEO of Kuqi is also take in charge of a P2P platform "ChengXin credit", and the platform has also been listed as an abnormal business by the industrial and commercial department. It is difficult to make people do not suspect that the Kuqi bicycle capital chain breaks, the deposit is difficult to refund because the huge deposit has been pumped away to P2P. The pool of funds formed by huge deposits needs to be supervised by third parties in order to maintain independence and security. Kuqi Bike once said that it set up a special account at Minsheng Bank. Minsheng Bank said that Kuqi Bike did not open a supervised special account at Minsheng Bank, but only a general deposit account. As a result, the bank did not fulfill the supervision. Now ofo is beset by a debt crisis, although the platform has clarified this, the user's concerns have not been eliminated. Thus, many users have applied for a refund in a short time. In March 2018, ofo mortgaged movable property to Alibaba and borrowed 1.766 billion yuan (\$US 0.26 billion) to overcome its turbulent period.

Chapter 3 Pedagogical Note

3.1 Research questions

According to the thorough investigation among the relevant literature and data that we can access to, with consideration of filling up the gap in the current research literatures about Chinese shared bike industry, we developed our main research questions and sub-questions as follows:

Main question:

-What is the suggestion that can be given to ofo in its current situation? (Government and platform)

Sub-questions:

-What is the current situation of Chinese shared bike industry? (PEST)

-What are the driving factors for the development of Shared bicycles in China?

-What are the implications for ofo from the development of the whole industry?

-According to the profit model of the whole bike-sharing industry, what are the current deficiencies of ofo?

- What is the profitability of ofo? (Sensitivity analysis)

3.2 The case's target audience

The educational target for this case are Business & Administration students.

The target and potential reader of this thesis are managers of bike manufacturers, managers of the companies who supply the manufacturing materials and city manager. Or technology especially in terms of Internet of Things and Internet Finance, entrepreneurs who focus on Things and Internet, Internet Finance and cloud technology, researchers who focus on green transportation or shared bike industry, venture capitalists and Chinese economists

3.3 Educational objectives

The main objective of this thesis is to create a good case study that allows Business & Administration students or professionals to develop their knowledge in shared bike business in China. This paper also investigates and analyze the situation of sharing bike industry, including its business model,

characteristic profitability and take ofo as an example to give a real situation, to give readers clear insights of this emerging sharing business.

In this situation in particular, the aim is to create a case study that gives the opportunity to:

- Understand the China's shared bicycle market, its development, characteristic, the competitive environment and its consumers. Analyze the market and identify the problems facing by China's bike sharing companies.

- Be able to recognize the strength, weakness, opportunities and threats of ofo through the analysis tool.

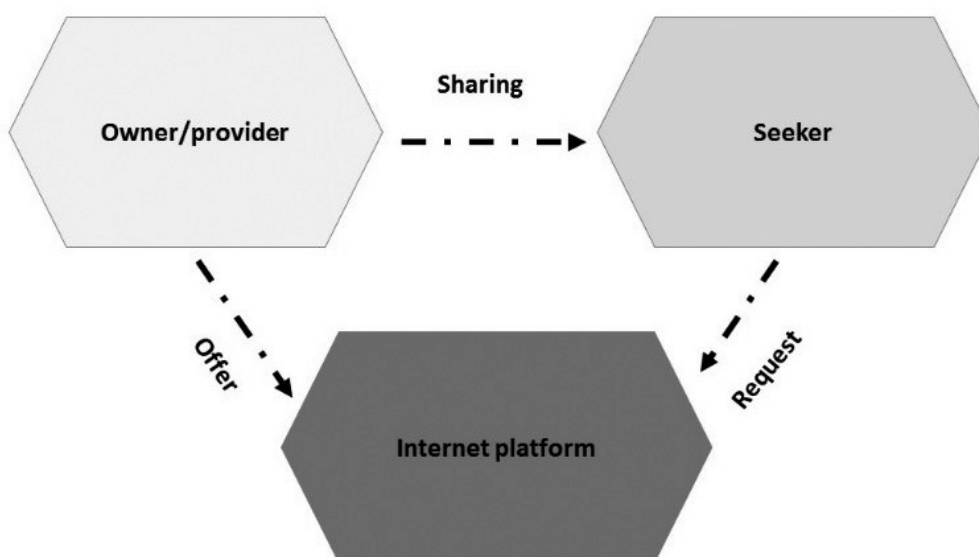
- Be able to consider all the information available and analyzed the selected company ofo's situation, and give some rational management suggestion from the point of platform and government.

3.4 Literature review

3.4.1 Concept of sharing economy

In the sharing economy model, the word "lease" often appears and becomes the most important business form in this new business model (Zhaoli, 2016). In the new business context, "lease" means "own". When you need to use something temporarily, you don't have to pay a high fee to buy it from others. Driven by this business model, people can use shared bikes and accommodation and even smaller goods through the Internet. With the rapid development of mobile Internet, aims to build a healthy social and economic ecosystem Shared economic development in various fields, gradually it will effectively contact different people and objects, integration of resources for innovation, realize the production, distribution, trade, consumption, and even the whole ecosystem, the specific consumption model as shown in Figure 6

Figure 6 Sharing economy model



The "sharing economy" is defined as described above. "Sharing economy" is a new business model, which is mainly based on the sharing of individual resources. With the help of mobile Internet technology, it connects consumer demands according to the business rules of peer-to-peer transaction and common consumption, so that consumers can share resources and services from others in society according to their actual needs. The sharing economy business model can help enterprises alleviate the problem of idle resources caused by excessive consumption and promote China's economy to enter a circular and sustainable development state. At the same time, the application of the sharing economy business model to a certain extent indicates that the market segment has the conditions to fully open, and it virtually guides relevant departments and enterprises to reform and innovate the traditional market model.

3.4.2 Concept of business model

(1) E-commerce perspective

Relevant experts defined relevant content in the early stage, all business behaviors on the Internet were summarized as E-commerce (Danyang, 2013). In the opinion of these experts and scholars, the Internet can innovate traditional companies and integrate resources into traditional business models, thus promoting the E-commerce of business environment (Don pepper, 2014). In order to better study E-commerce, they put relevant content into a scientific position for evaluation, and elaborated on how

to complete business classification through scientific theories. They believe that although the relevant researches have been carried out step by step at present, the research of business model is not sufficient, and scientific data model is also required for support. From this perspective, they regard business models only as a way to guide economic development

(2) Strategic perspective

Business model has a separate understanding in the strategic level, which mainly refers to the choice of strategy and the ways and means of organizing strategy. As for the detailed understanding of business model, some experts and scholars have started to study, among which Mason & Spring (2011) proposed a mature architecture. Technical level, market positioning and network architecture become the key factors in this architecture system, and gradually play a very important role and value.

In addition, starting from this architecture, Mason & Spring (2011) explain the business model in more detail. In their point of view, the business model follows a framework approach, which can have a very important impact on the activities of groups or individuals, and also reveals the correlation between various activities in the market level from a series of researches.

At the end of the last century, the sharing economy was proposed by the economics field, and in the early 21st century, the sharing economy was extended to the shared economic business model: (Adam, 2016). In November 2008, Groupon, the founder of the shared economic business model, established a special service group buying segment, and in the next three years, it became the first listed company to focus on group buying (Dongyan, 2013). The development of Groupon's shared economic business model confirms the characteristics of the shared economy concept proposed by Puschmann (Puschmann, 2016). This is because Puschmann has analyzed the websites of Open Table, Groupon and other companies, and learned that the scale of the above-mentioned company's offline stores is constantly strong. Until 2011, research on the sharing economy model was more valuable, but although the research process was less than six years, it has made the sharing economic business model deep into the daily life of consumers. At present, the research results related to the shared economic business model are concentrated in the following three levels:

3.4.3 Consumer level

First, the results of research at the consumer level. Hernández et al (2011) explored and analyzed the consumption of online market, and found that by the influence of Internet technology, consumers have gradually accustomed to and adapt to consumption through the network. Since then, Kim and Benbasat (2009) have studied the relationship between price and online consumer trust, and studied the impact of the trust guarantee provided by the website under the shared economic business model on consumer perceptions. The research done by Zo and Ramamurthy (2009) shows that there is a close relationship between the shared economic and commercial platform and the loyalty of consumers. Under the premise of differences in quality and price, most consumers tend to choose a more fixed consumption platform. Stokes and Rinne (2014) pointed out in his book that helping consumers and guiding consumers to make scientific decisions is one of the main goals of the market. Professor Xiaoming (2012), a Chinese economist, compared and analyzed the risks faced by consumers in online shopping, and found that factors affecting the quality and efficiency of consumers' online shopping include capital flow, information flow and logistics are not synchronized. The research results of Chenzhen and Xianchun (2011) show that many modern enterprises have introduced a shared economic business model, but in some areas, the consumer market will still be affected by unstable factors, such as bargaining, distribution malpractice, and network security etc.

3.4.4 Enterprise information level

Second, Chambers and Patrocinio (2012) pointed out that enterprises can obtain a large amount of transaction information in the Internet database, which will promote the transparency of information in the e-commerce market to a certain extent. Baden-fuller and Morgan (2010) found in their research that providing consumers with free service projects can effectively retain and attract customers. Therefore, some enterprises will introduce free home delivery service sector after their own online consumption reaches a certain amount. Kauffman and Wang (2001) through the case study, listed the factors influencing the comprehensive level of the business model of the sharing economy, including external effect of demand, validity period and price discount, etc. Nov (2010) comprehensive analysis of the Shared economic business model, and draw one of Shared economy business model the influence of performance to price mechanism innovation, in particular, in different price mechanism, to make a comparison on profits, thus further shared economic business model how to guide

enterprises to develop a more perfect management strategy. Botsman (2011) believes that the sharing economy business model requires a win-win-win situation among potential participants, sellers and participants.

3.4.5 Advantage level

Third, the sharing economy business model advantage level. Dong pointed out that the online trading and communication platform of the service sector of the sharing economy business model has largely promoted the network degree of the service industry. Yang pointed out that although it is similar to the traditional e-commerce management model, the sharing economy business model is a perfect combination of traffic and payment. At the same time, Tianbo (2015) think online payment is the core part for sharing of economic business model, and the traditional electricity management mode is only after completing the online payment, the business was completed. Xiaofei (2011), shared economic business model can provide brand-new consumption experience and experience for the majority of consumers, thus it can be seen, shared economic business model has a significant competitive advantage. On this basis, scholar Jingyu (2015) proposed to combine the mobile offline experience sector with the sharing economy business model, and classified such management and business model. Yanqing (2012) pointed out that under the increasingly fierce competitive pressure, the business model of sharing economy should combine its own advantages and constantly innovate, so as to obtain the opportunity of long-term healthy development.

3.5 Methodology

This chapter introduces the methodology of this case study, and it was divided into four parts as follow:

3.5.1 Research paradigm – Mixed Research

This paper is a mixed research on the emerging sharing bike (pile-less) business in China. With focus on the development history and characteristics, to give a clear understanding of the whole emerging industry and the emerging thing of pile-less shared bicycle, and understand the impact of the emergence of shared bicycle on society and economy and the significance behind it. Through the collection of a large amount of data and rigorous analysis, we try to solve the dilemma currently faced by selected company ofo, and give suggestion to develop a better strategy based on these analysis

results. Thus, mixed research is more rational and rigorous way for us to interpret the emerging industry and makes an analysis to the existing problems.

3.5.2 Methodological approach and methods

Throughout the research process, we started from reviewing the development of bike sharing industry in literature and its business model, also investigated profitability issues regarding the whole industry and select company- ofo respectively. It is clear that there is a gap in the literature describing this bike sharing industry's dilemma in China. Under this condition, several research questions proposed are based on management theories. Then different dynamic industrial frameworks are selected according to the relevance, such as Porter's five forces model and the PEST analysis. In view of the dilemma faced by company ofo, we combined the results of SWOT analysis and Sensitive analysis, to present our conclusions and some future development suggestions.

3.5.3 Data collection and analysis

Qualitative data of this project are mainly collected through professional data analysis platform and online public resource, for example Trustdata and ofo official website. For the industrial dynamic analysis, we mainly applied the theories framework - PEST and Porter's five force model to give a whole view and assessment of the pile-free bike sharing industry in China. For the case study analysis part, we select SWOT and Sensitivity analysis to analyze the situation that ofo confronted. All the analytical tools and frameworks are selected upon relevance.

3.5.4 Limitations

Since ofo is a private limited company, its public data is limited online, which can lead to misinterpretation of data and ultimately lead to bias in research results. Also, part of the information we accessed may be wrong or be subjective information. Due to time and space constraints, planned professional interviews were not implemented because we were still waiting for the response from the target company. So, we took a backup plan and we looked at all the information published on the web about our selected case company, ofo, as a source that provided us with all the important data we actually needed. All data we collected was updated by the time limit of the paper in December 2018.

3.6 Theories framework

3.6.1 PEST analysis model

It refers to the analysis of the macro environment. The macro environment also called the general environment. It refers to all the macro factors that affect the industry and enterprises. Analysis of macro environmental factors, different industries and enterprises according to their own characteristics and business needs, the specific content of the analysis will be different, but generally deal with politics, economic, social, technical and legal, the main external environmental factors affecting enterprises in five categories.

3.6.2 Porter's five Force Model

The Porter Five Force model specifically refers to the threat of new entrants, the ability of suppliers to bargain, the bargaining power of buyers, the threat of substitutes, and the competition among existing enterprises in the industry. This paper uses Porter's five-force model to analyze the shared bicycle enterprise ofo in detail.

(1) Supplier's bargaining power

The bargaining power of the supplier refers to the ability of the supplier to obtain a higher price when the enterprise obtains resources from the superior supplier or purchases the raw materials. There are many factors that determine the supplier's bargaining power, including the number of suppliers that can be selected, whether there are more or fewer suppliers in the market, whether the supplier's brand and quality are guaranteed, and the influence in the market. Influential suppliers have strong bargaining power, and vice versa. Supplier's rate of return, whether the supplier's control of costs is within the controllable range. Whether the increase of the price is due to market factors, such as the ability to acquire resources in the industry is weak. Whether the industry has a core customer base of suppliers, if the supplier already has stable customer resources, the bargaining power is strong. Therefore, many factors influence the bargaining power of suppliers.

(2) Buyer's bargaining power

The buyer's bargaining power is also controlled by a variety of factors. There are two main factors,

one is the sensitivity of the price, and the other is the relative bargaining power. The sensitivity to price determines the buyer's desire to buy and use. If the buyer has a strong demand for products and services, and the related substitute products are less, the buyer's bargaining power is weaker, and vice versa. Relative bargaining power refers to how likely the buyer is to drive down the price of the product, depending on the buyer's demand and the quantity supplied by the supplier.

(3) Threats of new entrants

The threat of new entrants means that the main market occupants in the existing market of an industry have a stable separation of interests in the market. Once the same competitive enterprises enter the market, it will have a greater impact on the interests of existing companies, such as the decline in the original market price, the rise in costs, the decline in profits, and the reduction in the number of users.

(4) Threats to alternatives

The threat of alternatives refers to the existence of alternative products and services in the market, which will limit the price of the original products and services of the enterprise, threaten the survival of existing enterprises, and even replace the existing enterprise market. The main factors that can determine the existence of alternatives are the following: the profitability of alternatives, the business strategy of alternative manufacturers, and the conversion costs of buyers.

(5) Competitive rivalry

The interests of enterprises in most industries are closely interrelated, and the profitability of some enterprises will increase, which will inevitably lead to a decline in the profitability of other companies in the same industry. As an important part of the overall strategy of the enterprise, the main objective of the enterprise competition strategy is to enable the enterprise to obtain the maximum competitive advantage. Therefore, in the implementation of the specific strategy, it will inevitably confront and conflict with other enterprises. How to deal with this reflects the ability of enterprises to cope with market competition. These confrontation and conflict are the main components of competition among existing enterprises. The competition between enterprises is mainly reflected in product prices, promotion of advertising, user experience, after-sales and so on.

3.6.3 SWOT analysis model

The book "Concept of Company Strategy" defines the company's strategy as the strengths and weaknesses of the company, the opportunities and threats in the environment, and proposes a SWOT analysis framework in the process of strategy formulation. Using SWOT analysis, we can conduct a comprehensive, systematic and accurate study of the environment in which the enterprise is located, so as to develop a development strategy and plan countermeasures suitable for the development of the enterprise based on the research. Specifically, the SWOT analysis method refers to the comprehensive analysis of the internal and external, the advantages and disadvantages of the enterprise through the analysis method. By analyzing the advantages and disadvantages of the enterprise itself, as well as the opportunities and threats existing in the external environment, enumerated them in the form of a matrix, and then used system analysis to correlate various factors and compare them to obtain a series of reasonable conclusions. And the conclusion usually has certain decision-making on the development of the enterprise (Chenhongyan, 2013) SWOT analysis model divides the enterprise into four categories, each of which has a corresponding strategic plan for the enterprise to choose.

3.6.4 Sensitivity analysis

Sensitivity analysis refers to identifying sensitive factors that have important influence on the economic benefit index of investment projects from many uncertain factors, and analyzing and measuring the degree of influence and sensitivity of the project economic benefit indicators, and then judging the project. An uncertainty analysis method for risk tolerance.

Sensitivity analysis helps determine which risks have the greatest potential impact on the project. It keeps all other uncertainties under the baseline values and examines how much the uncertainty of each element of the project affects the target.

Chapter 4 Analysis Results

4.1 Pest analysis

Political:

In China, low-carbon and environment-friendly means of travel are being vigorously promoted. In this context, many local governments have introduced a series of policies to encourage and support. For example, Shanghai introduced the "Code for Shared Bicycle Service"; Chengdu issued the "Technical Guidelines for Non-motorized Parking Locations in Public Areas in Downtown Area of Chengdu". These management and specifications are for the sharing of bicycles in urban areas and the operation of bicycle companies. And management put forward policy requirements and guidance. The development of shared bicycles is conducive to saving resources, protecting the environment and alleviating urban traffic congestion. As a major innovation in the field of public services, shared bicycles carry more social service functions, which are conducive to improving the quality of public services and improving people's living standards. How to alleviate the traffic pressure in cities is an urgent issue for every city government. With the increase of private cars, urban traffic congestion has become a normal phenomenon. Measures such as restrictions on foreign licenses and restrictions on single and double numbers cannot solve the problem of travel from the root cause. Under the environment, the government is more willing to see shared bicycles contributing to the development of the city's transportation. Creating a sound policy environment and supporting the sharing of bicycles is also a manifestation of the government's service function.

Economic:

The steady growth of China's economy has provided a good economic environment for the operation of shared bicycles. Leisure funds, financing and venture capital have provided a large amount of financial support for the development of shared bicycles:

(1) Free resources and capital operation

When some resources are not used for a long time and remain in their original state, this part of the resource is defined as an idle resource. The market platform can make reasonable use of this part of the free resources through sharing, and at the same time drive the conversion of funds. In addition, in

the platform operation mode, the funds paid by the third party to the platform will also be stored in the company's account for a long time, and the company can also use this part of the funds to appreciate and create more profits.

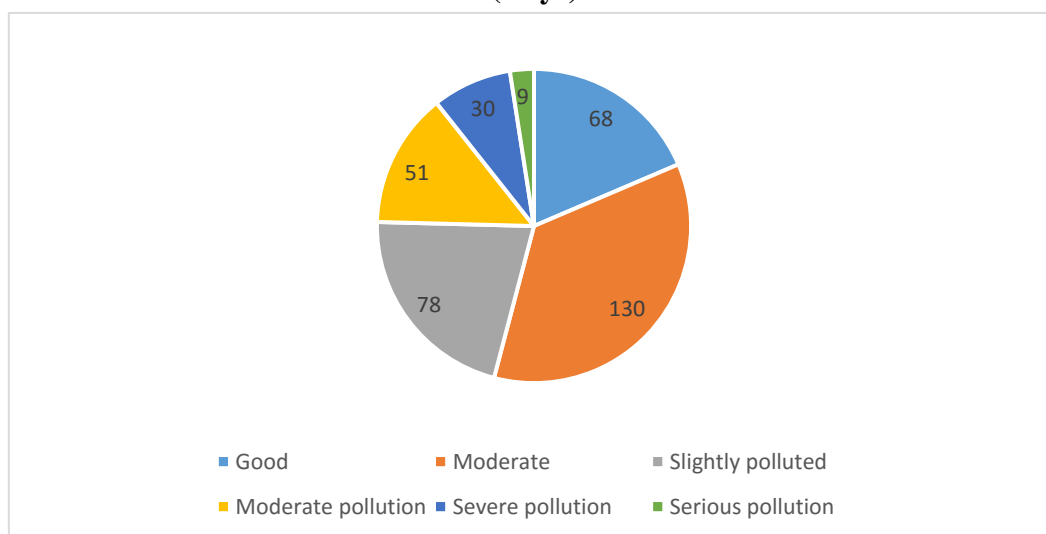
(2) Listed financing and venture capital investment

In the rapidly developing environment of the Internet, the development of Internet companies is closely related to listing financing and risk control. In 2017 alone, ofo absorbed a \$450 million investment from an investment group represented by DST's lead investment in March, and in July it absorbed an investment of \$700 million on behalf of Alibaba. A large amount of money was injected into the ofo to share bicycles, which provided sufficient funding for its development.

Social:

The rapid development of the economy in recent years has caused the problem of urban air pollution to become more and more serious, and the problem of urban traffic congestion needs to be solved urgently. It can be seen from Figure 7 that air pollution has reached an urgent stage and will not be solved. People's quality of life and body quality will be seriously affected. It can be seen that the average daily concentration of Beijing in 2016 is not up to standard days. It has reached 168 days, accounting for 45.9% of the year, posing a great threat to the health of urban residents.

Figure 7 The average daily pollutant concentration in Beijing reached the standard in 2016 (Days)



Source: Beijing Environmental Protection Bureau

At the same time, the traffic problems in first- and second-tier cities are not optimistic. From Table7, it can be seen that the congestion index of Jinan, Harbin, Beijing and other cities in 2016 ranked the top three, resulting in greatly reduced efficiency of urban travel. With the improvement of people's living standards The whole society is increasingly eager for green cities and healthy travel, and the demand for short-distance travel of the “last mile” has become stronger. All these social problems have promoted the birth of shared bicycles.

Table 7 2016 congestion index of major Chinese cities

Rank	City	Highway congestion index	Average speed(km/h)
1	Ji'nan	2.29	19.9
2	Haerbin	2.13	21.5
3	Beijing	2.17	23.1
4	Chongqing	2.06	23.4
5	Guiyang	2.11	22.6
6	Shenzhen	2.12	24.4
7	Kunming	2.09	24.6
8	Hangzhou	1.91	22.5
9	Dalian	1.88	22.6
10	Guangzhou	2.15	23.0

Source: Beijing Environmental Protection Bureau

Technological:

The development of the Internet platform, the popularity of mobile APP, the security and convenience of third-party payment systems, and the maturity of bicycle manufacturing technology have provided a good software and hardware technology environment for the operation of shared bicycle companies such as ofo:

- **Mobile APP platform**

The popularity of smartphones has promoted the transformation of the Internet economy, and also led to the transfer of economic activities, directly shifting the business processing of the PC to the

mobile terminal, thereby providing greater convenience for users to use and allowing users to complete related work and tasks anytime, anywhere. Therefore, the development of mobile Internet provides a better platform for the development of Internet enterprises.

- **Wireless network technology**

The development of mobile internet technology and GPS location service system provides better services for mobile users. The coverage of offline wireless Internet allows users to use smartphones to connect anywhere, anytime, and GPS can provide users with better positioning services to meet the diversified needs of customers

- **Third-party payment system**

As a key part of the development of the entire sharing bike business model, third-party payment systems are very important and determine the normal transport of blood in the whole operation mode. In Internet transactions, the use of cash is prohibited, which also plays an important position for third-party payment systems. The third-party payment system plays an important role in the transaction of the entire mobile terminal, and also puts forward the demand in terms of security and efficiency.

4.2 Porter's five forces model

Supplier's bargaining power

The bargaining power of the supplier determines whether the bicycle company is in the dominant stage. From the perspective of the shared bicycle enterprise, since bicycle manufacturing belongs to the traditional craft and has a history of hundreds of years, there is no high technical barrier for bicycle manufacturing technology. Therefore, the bicycle company has many upstream suppliers to choose from when purchasing bicycles, so the supplier's bargaining power is poor. The production price of bicycles can be depressed, which is very advantageous for shared bicycle companies. This trend is conducive to the development of the shared bicycle industry. However, from another perspective, it is not conducive to the development of the shared bicycle industry. For example, the price of the main raw materials for bicycles has risen sharply in recent years, such as the steel for manufacturing frames and the rubber for manufacturing tires. At the same time, since public bicycle travel belongs to urban public services, the safety of travel is a topic that cannot be separated. Especially in the past year,

there have been more and more accidents when riding bicycles, and the safety of bicycles has become more and more serious. Many first- and second-tier cities have set clear requirements for the service and production technology of shared bicycles. For example, the “Standard for Shared Bicycle Service” formulated by the Shanghai government strictly stipulates that the quality standards of bicycles need to be higher than the requirements of national standards. For example, parts locks, solid tires, brakes, frames, baskets and other parts that are more important to the safety of the bicycle. The standard also stipulates that the shared bicycles operated in the market must be inspected annually for safety. Unqualified ones should immediately recovered. Only after the safety inspection, they can operated on the road, and the bicycles that have been in service for more than three years must be scrapped. The bicycle integrity rate must be above 95%. These mandatory requirements will force the shared bicycle to be upgraded and remanufactured bicycles, which will increase the cost of the bicycle and affect the supplier's bargaining power.

Buyer's bargaining power

The buyer's bargaining power will also affect the profitability of the bicycle company. If the buyer's bargaining power is poor, the bicycle company's profitability is strong, and vice versa. Cycling users are buyers of the shared bicycle market. They are passive recipients of market prices and lack of advantages in bargaining. Therefore, it is very beneficial to consider the profitability of bicycle companies from this perspective. But from another hand, there are many brands in the shared bicycle market, and their products and services are almost the same, lack of differentiation, and the competition is fierce. They must compete in the price in order to occupy the market as soon as possible, and these factors give buyers more choices. This is an advantage for the buyer's bargaining power and affects the profitability of the bicycle company.

Threats to alternatives

Alternatives are those of the same type that offer similar functionality, similar services. With the gradual development of shared bicycles, market recognition and the industry's own bottlenecks are gradually emerging, alternatives are gradually emerging in the market, specifically in the following aspects:

- Government-led urban public bicycles service. Before the establishment of the ofo, there were public bicycles in many cities. This kind of bicycle is a public service for the government to

regulate travel. It is difficult to pick up and return the bike itself, failing to achieve real convenience and effective while operating. Management and maintenance are far less efficient than shared bike companies, so public bicycles service have little threat to the sharing bicycle companies like ofo.

- Traditional means of transportation such as bus, subway, taxis, etc., which are more to solve long-distance travel, implementing public transportation functions, and the advantage of ofo sharing bicycle platforms is obvious in solving the "last mile".
- The listing of shared cars and shared electric scooter poses a certain threat to shared bicycles. But the overall market share is low, and at the same time, it is still in the stage of development and exploration in solving the charging and parking spaces.

Threat of new entrants

The threat of new entrants is a competitor that does not pose a threat to the operation and development of bicycle companies, but still has potential threats. The potential threats to new entrants depend on barriers to entry into the industry and the extent to the respond of shared bike companies within the industry. In terms of the shared bicycle market, Mobike and ofo currently occupy the largest market share. However, due to the large market for short-distance travel, the demand has not been thoroughly explored. The penetration rate of Shared bikes in third-tier and fourth-tier cities is far less than that in first-tier cities like Beijing, Shanghai, Shenzhen etc. The number of people who can actually use the shared bicycle is not too much. Therefore, it can be seen that there is still a large part of the bicycle market share that has not been excavated. At the same time, the scenes of using bicycles are single, most of them are commute, short-distance travel, and cycling around tourist attractions, so the frequency of bicycle use is low. What's more, these single business operation modes are very easy to be imitated, so the potential competitors have a strong ability to enter. In the future, this market structure is expected to attract other small-scale bicycle companies to target markets that have not yet been developed, such as third- and fourth-tier cities. At the same time, there are many hidden concerns behind this business opportunity. For example, the profit model of shared bicycles is relatively simple, relying on cheap riding expenses to obtain profits no longer competitive; Bicycle application scenarios are less, mainly used in short distances travel etc. This simple business model is very easy

to learn quickly by newcomers, resulting in serious homogenization of services and products.

Competitive rivalry

Many bike-sharing companies have collapsed as shortage of capital or poor management. In May 2018, ofo, Mobike and Hellobike accounted for the top three in the industry with 29.377 million, 25.266 million and 5.291 million monthly active APP users respectively, according to iiMedia research's 2018 Shared bike market development report (iiMedia, 2018). It can be seen that the Chinese shared bicycle market has been basically occupied by ofo and Mobike, and the third place, there is a gap between the two is very obvious. Other brands share bicycles, the market share is almost negligible. In this market context, ofo need to improve their competitiveness, maintain users, and change users' price-sensitive situations. Only in this way, can the platform gain loyal fans and consolidate its position in the entire industry.

In conclusion, the results are summarized as follows according to the model. Table 8

Table 8 Porter’s five forces model

	Supplier’s bargaining power	Buyer's bargaining power	Threats to alternatives	Threat of new entrants	Competitive rivalry
Power	weak	Medium	Medium-weak	Medium-strong	Strong

4.3 SWOT analysis

Strength:

- Financial Strength: Until now, ofo has entered E+ Series and acquired several investments from powerful companies such as Alibaba, Didi, and Xiaomi etc.
- Product Strength: ofo has fashionable appearance and famous for its yellow color; With GPS navigation (new model), bikes are easy to find; It is designed to be as light as an ordinary bicycle, so that people can ride it more comfortably. And manufacturing costs are only a fifth of Mobike's.

- **Supply Chain Strength:** ofo and its upstream suppliers, such as Fenghuang and Feige, have entered into exclusive agreements that allow them to make their own bikes, rather than work with others.
- **Penetration Strength:** ofo has launched more than 10 million shared bicycles worldwide in more than 100 cities.

Weaknesses:

- **Product weakness:** Due to the similar design with ordinary bicycles, the quality of bicycles is low, and the number plates of Shared bikes are scratched, broken tires, broken chains, deformed heads and other damages are very serious. This not only affects the reputation of ofo products, but also causes high maintenance costs. The non-intelligent lock model launched by ofo in the early stage also has a great impact on consumers' experience.
- **High maintenance cost:** In addition to the high failure rate and the cost increase brought by the previous non-intelligent lock model, with the continuous increase of ofo bicycles in domestic and foreign investment, the maintenance cost is also increasing. It involves the communication between the administrative departments of the government, municipal ground planning and management, maintenance and other problems.

Opportunities:

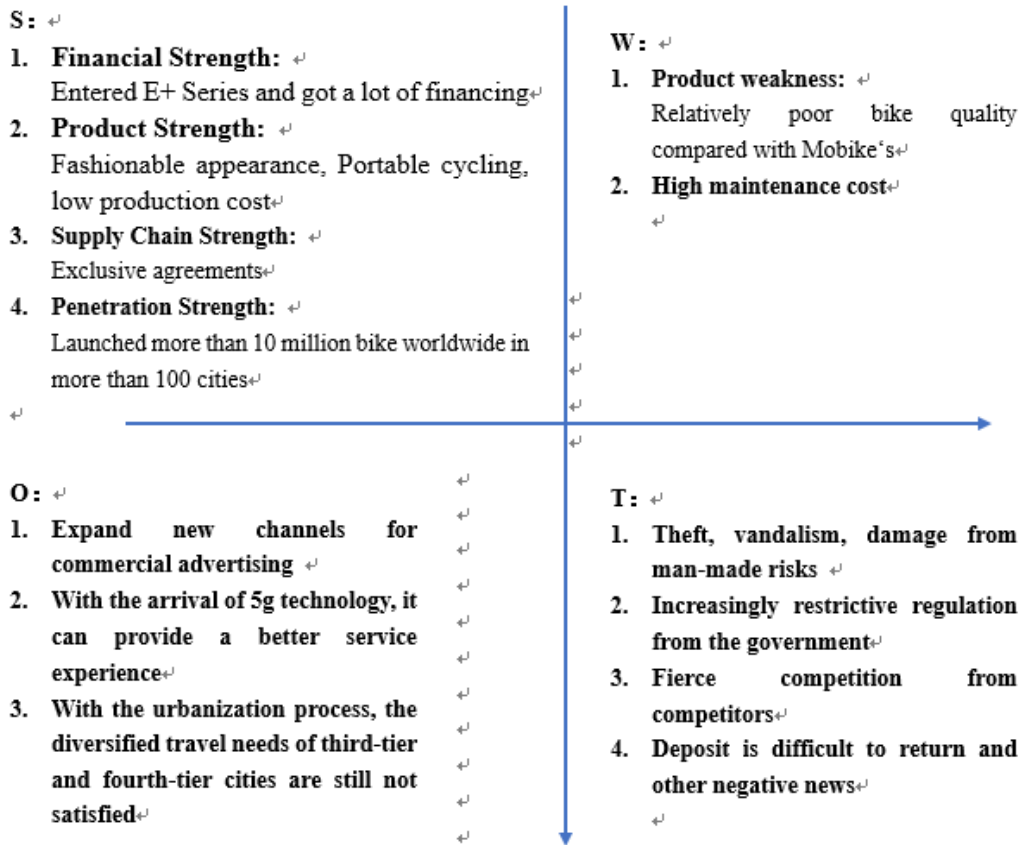
- Solve the last mile transportation problems in urban cities. Popular in large cities especially in high-density area. Large customer base in urban area; Bike can be used as moving advertisement banners, and rented to merchants. Partner with government or companies to promote healthy lifestyle. Offer big data, partner with telecom companies such as Huawei and Tencent, use their 5G technology to improve navigation and tracking function
- With the acceleration of urbanization in the third and fourth tier cities, the market in these cities also has great potential to develop businesses.

Threats:

- Theft, vandalism, damage from man-made risks. Regulation from the government is due to illegal parking, lack of bicycle parking lots, and insufficient bicycle lanes. The phenomenon of people

driving recklessly also increases the risk of riding Shared bikes. Fierce competition from competitors in the same industry pressure, such as Mobike, Hellobike.

Figure 8 SWOT analysis



Opportunities- Strength strategies	Opportunities- Weakness strategies	Threats-Strength strategies	Threats-Weakness strategies
<ol style="list-style-type: none"> 1. Continued to expand in third - and fourth-tier cities with iconic colors and lightweight features 2. Strengthen the cooperation with 5g suppliers through the advantages of supply chain to achieve the layout of point-to-point supply chain network 3. Develop different advertising business in different cities 	<ol style="list-style-type: none"> 1. Cooperate with 5g technology suppliers to strengthen real-time monitoring of traffic flow and people flow and reduce operation and maintenance costs 2. To promote bicycles in third-tier and fourth-tier cities, the problem of cost and bicycle quality should be weighed 	<ol style="list-style-type: none"> 1. Actively seek financing partners to temporarily overcome the financial crisis 2. Set cycle standards higher than those set by the government in the production supply chain to prevent future changes in market standards 3. Strengthen cooperation with the government in various places, formulate a unified credit system applicable to all sharing economy platforms and improve relevant laws 	<ol style="list-style-type: none"> 1. Gradually replace previous models with non-intelligent locks to reduce the risk of loss 2. Under the premise of cost consideration, strengthen the technology and innovation of bicycle, or add different models to meet the needs of different groups, achieve product differentiation, enhance user stickiness, and then achieve competitive advantage

4.4 Sensitivity analysis:

According to cash inflows and cash outflows, and assuming that financing is only used to expand reproduction, not to participate in other investments, the deposit is fixed funds, and ultimately it is to be returned to consumers, so a simplified financial model for sharing bicycle profits can be established as follows:

$$\text{EBIT} = \text{Interest income from deposits} + \text{Rental income} + \text{Revenue from other operations} - \text{Total depreciation} - \text{Operation labor cost} - \text{Damage and lost cost} - \text{Maintenance cost}$$

According to this model, based on the data provided by our case, we take the ofo bicycle as an example, in terms of income:

The deposit is 199 yuan, the number of users is 28.051 million, the annual interest rate is 5%, the deposit return rate is 40%, and we can get the annual income from the deposit interest of about 167.46 million yuan (24.80 million US dollar).

The number of bicycles is 10 million, the coverage rate is 50.89%, the average daily serving time is 6 hours, the charging standard is 1 yuan per hour, and the charging days are 300 days (excluding the number of days that are not suitable for cycling and free riding activities). Therefore, through the rental income earned was 9160.2 million yuan (1357.07 million US dollar). Assuming a balance of income and expenditure from other operations, the total revenue can be calculated to be 9327.66 million yuan (1381.88 million US dollars)

Expenditure:

The purchase cost per bicycle is around 350 yuan (51.85 US dollar). According to the average market price, the residual value of bicycles is 50 yuan (7.4 US dollar). According to the regulations, the maximum life of shared bicycles is 3 years, then each bike depreciated to 100 yuan (14.81 US dollar) per year, and the total depreciation is 1000 million yuan (148.15 US dollar). The operating labor cost is calculated according to the minimum wage standard of 3,000 yuan (444.44 US dollar) in the first- and second-tier cities, and the regulations required the shared bike companies equipped the operation labor not less than 5% of the number of bicycles. Hence, the operating labor cost is 1800 million yuan (266.67 million US dollar). Damage and loss refer to bicycle damage and loss caused by human theft, damage, appropriation, and the rate of 25% per year. The cost of maintenance is the cost of using in a normal situation, which is approximately 5% of the cost of bicycle purchases per year. It can be calculated that the total expenditure is 3,850 million yuan (570.37 million US dollars) per year.

Finally, the EBIT is available at 5,472.66 million (811.5 million US dollar) per year.(Table 9)

Table 9 Ofo's profitability model

Normal condition	
Deposit	199
Users (million)	28.051
Annual interest rate	5%
Deposit return rate	40%
Interest income from deposits	167.46447
Daily service time per bike (hours)	6
Bike delivery quantity (million)	10
Rate of coverage	50.89%
ofo charging standards	1
Days of charge	300
Rental income	9160.2
Revenue from other operations	
Total Income (CNY) (million)	9327.66447
Total Income (USD) (million)	US\$1,381.88
Exchange rate:6.75:1	
ofo per bike purchase cost	350
residual value of per bike	50
Estimated useful life	3
Annual depreciation per bike	100
Total depreciation	1000
Operation labor cost (The proportion of opera	1800
Damage and lost rate	25%
Damage and lost cost	875
Maintenance cost (5% of the purchase cost per	175
Total expenses (CNY)	3850
Total expenses (USD) (million)	\$570.37
Exchange rate:6.75:1	
EBIT (CNY)	5477.66447
EBIT (USD) (million)	US\$811.51
Exchange rate:6.75:1	

In order to further analyze and predict the impact of changes in the factors of shared bicycle cash inflows and cash outflows on profits, based on the established financial model, we still use the ofo bicycle as an example to conduct sensitivity analysis, and identify the sensitive factors. At the time, we only conduct a single factor sensitivity analysis, which assumes that the various influencing factors are independent of each other. Only one factor change is observed at a time, and other factors remain unchanged to analyze the degree of influence and sensitivity of this variable factor on the profit indicator. Table 10 below shows the impact of cash inflows and cash outflow indicators on shared bicycle profits.

Table 10 Sensitivity analysis results

Deposit mode				
Precision	0	10%	20%	Sensitivity Coefficient(S)
Index				
The number of users	5477.664	5494.411	5511.157	0.030572339
Deposit return rate	5477.664	5466.500	5455.336	-0.020381066
Daily service time	5477.664	6393.684	7309.704	1.672282628
Days of charge	5477.664	6393.684	7309.704	1.672282628
Operation labor cost	5477.664	5297.664	5117.664	-0.328606802
Damage and lost cost	5477.664	5390.164	5302.664	-0.159739197
Maintenance cost	5477.664	5460.164	5442.664	-0.031947496

The sensitivity coefficient in Table 10 reflects the sensitivity of each factor to the impact of profit. The larger S, the more sensitive it is to the profit, $S > 0$ means the same direction change, and $S < 0$ means the reverse direction change. It can be seen that the daily service duration and the number of charging days in the cash inflow have the greatest impact on the profit. The daily service time has increased from 6 hours to 7.2 hours (20%), and the profit has increased by 33.45%, from 5477.664 million yuan (811.51 US dollar) to 7309.704 million yuan (1082.92 US dollar). The number of days charged increased from 300 to 330 days (10%), and the profit increased by 16.72%.

In terms of expense, operation labor cost, damage and loss cost has a large impact on profits. For every 10% increase in operating labor costs, profits reduced by 3.3%, and for every 10% increase in damage and loss costs, profits reduced by 1.6%. Therefore, if ofo wants to increase profit income, it needs to take effective measures to increase the daily serving time per bike and reduce the operating labor costs and cost of damage and loss.

However, in the current future, with the popularity of deposit-free model, ofo should focus on reducing expenditures.

According to this table, we can also get the break-even point of the daily service time, which is 2.41

hours, or the number of days of charge reached 104.22 days.

In the deposit-free mode, the daily service time is 2.52 hours, or the number of days is 126.089 days, which can achieve break-even.

Chapter 5 Conclusion and suggestion

5.1 Conclusion

To sum up, with the progress of Internet technology and economic development, there are more and more idle resources in the society, but people's travel needs are still not satisfied, which promotes the emergence and development of Shared bicycles in China. Since pile-free shared bike emerge in our country, it draw lessons from the development of public bicycle, spread from first and second tier cities to three or four tier cities, but it is more rapid, and the investment subject has changed, which indicates that our country market is more open, more diversified consumer demand, people's consumption patterns are also upgrade.

Ofo, as the start-up and leader of the industry, effectively integrates the idle resources in the society through the mode of “connecting”, which solves the problem of excess capacity of bicycles in the society and satisfies the travel demand of people for “the last mile”. It is an innovative idea.

Taking the campus as the starting point of product experiment, students, who are high-density and high-quality groups, will be the torchbearers to publicize ofo brands and green health concepts, and achieve competitive advantages by integrating upstream suppliers.

However, in 2018 the entire sharing bike industry ushered in the winter. Ofo also got stuck in the debt and trust crisis. Through the profit model of sensitivity analysis, we found that different from media reports, after launching a certain number of shared bikes, the profit main source comes from the daily rent although the unit price is very low. Rather than from the deposit, this is the so-called “long tail effect”, combining SWOT analysis, we have reason to believe that the reason for the crisis in addition to the limitation of the product itself, the externalities of public goods, the sharply strategic expansion pace result of higher maintenance and labor costs.

How to maintain the stickiness of our "long tail" users and how to promote the healthy development of China's bike sharing industry is the next issue facing by the bike sharing industry and the whole society.

5.2 Suggestions

Perspective from the government:

- Actively explore emerging business models in the shared bicycle industry and encourage market innovation

At present, the government generally supports the shared bicycle industry. Because of the convenience and environmental protection of sharing bicycles, it is beneficial to the benign development of the city to a certain extent. Therefore, in order to promote the standardization and healthy development of the shared bicycle industry. On the one hand, it is necessary for the relevant departments to further explore the emerging business model of the shared bicycle industry, and actively study the future development direction of the shared bicycle industry according to the needs of social development. On the other hand, it is necessary for government to establish an innovative supervision concept, encourage the rational innovation of the shared bicycle industry with an inclusive attitude, release the optimistic signal, and create an open and positive shared bicycle market innovation environment.

- Accelerate the formulation of corresponding laws and regulations, set behavior standards and bottom line for the shared bicycle market

The entry barrier of the shared bicycle industry is low. Many operators are eager to profit and seize the market. The management of shared bicycles is less important, resulting in negative risks such as bicycle quality hazards, user information security cannot be guaranteed, and deposits are difficult to retreat. Therefore, it should be cut in the form of local regulations, formulate corresponding laws and codes of conduct, set the bottom line of the behavior of both the supply and demand sides in the shared bicycle industry, to better meet the needs of users and protect the interests of users, which is also the guarantee of the enterprises. For the problem that some deposits are difficult to return, bicycles occupy public areas and traffic, etc., specific behavioral norms are required to restrict enterprises and users.

- Establishing a credit system, building a platform for sharing economic credit, and strengthening the awareness of user behavior

Many of the problems caused by shared bicycles are caused by unreasonable and irregular use by

users. Damage to bicycles and violations of public roads have had a negative impact on businesses and society. Only when the user truly regards the shared bicycle as a convenient living tool can the bicycle play its greatest value. The establishment of user behavior norms, on the one hand, through the propaganda and education to improve the quality of users, on the other hand, companies must also take punitive measures to regulate users. Establish a shared economic credit platform, learn from the management experience of Sesame Credit, introduce credit management into the management of bicycle users, and guide users to civilized using. It is necessary to timely incorporate each user into the credit management and evaluation platform, record the uncivilized behavior in the user credit database in time, establish a deposit-free incentive mechanism related to user credit, and incorporate the serious untrustworthy behavior of the user into the public credit service platform and publicize it to the public.

Perspective from ofo:

- Improve the technical defects of the platform and strengthen the management of shared bicycles. The platform should first strengthen its own technical construction, and ofo should make technical transformations, such as: replacing the mechanical lock with a smart lock, setting network technical security indicators to protect the privacy of registered users, etc.; should focus on improving the sharing rate instead of blindly expanding the delivery. At the same time, should strengthen cooperation with the government and actively participate in the management of shared bicycles. For example, enterprises and the government jointly set up special parking areas to establish a fingerprint statistics database to regulate the use of shared bicycles by the public, at the same time performing fingerprint collection. Finally, the company can also open a reservation function to reduce the user's fear of being unable to use.

- Focus on customer needs and increases customer stickiness.

In the shared cycling industry, subsidies and free rides can quickly increase user stickiness in the short term, creating a consumption habit. But with more and more homogenized products, prices are not competitive, and customers' stickiness is gone. Therefore, product differentiation and focusing on the actual needs of customers have become an indispensable strategy. For example, Mobike and WeChat cooperate with each other to solve the "last mile" problem, draw a road map based on the user's track, real-time synchronization of people's traffic in different locations, appropriate cycling, improve

customer comfort and convenience, and thus improve customer stickiness. As the urbanization process becomes faster and faster, the travel needs of citizens in third- and fourth-tier cities should gradually be valued by ofo.

- Focuses on technological innovation, expands the profit model and strengthens cost control.

From 2018, ofo realized that the profit model was single, which accelerated the layout of the advertising business, but there are more commercial cooperation in the downstream that can be worth trying. It is not only the amount of income that determines the profitability of a company, but also the amount of cost. For ofo, although its bicycle manufacturing cost is low, because of the lack of related technology, its loss rate is at least 20%, so the operating cost and maintenance cost are inevitably very high, which can improve the technological content and reduce the bicycle operating costs are important.

- Create brand effects and increase market entry barriers.

The difference in the number of shared bicycles and the customs and habits of different places determines that the operation mode of sharing bicycles varies from place to place. The shared bike platform can be tailored to the local lifestyle based on local conditions. In addition, the platform should focus on creating an independent media communication channel such as the official account in each city, and provide local users with a platform for feedback. In short, when the shared bicycle platform is committed to providing value-added services to users, the brand effect it generates can greatly enhance the user's sense of belonging and loyalty to the brand.

References:

1. Adam, C. & Yitong, X. 2016. Behind the concept of "sharing economy". *State assets report*, 6: 108-109.
2. Baden-Fuller, C., & Morgan, M. S. 2010. Business models as models. *Long range planning*, 43(2-3): 156-171.
3. Bauwens, M., Mendoza, N., & Iacomella, F. 2012. Synthetic overview of the collaborative economy. *P2P Foundation*, 7.
4. Bo, Y and Xiao, Y. Ofo sued by Kerry EAS: awarded more than \$8 million in service fees. Retrieved December 14, 2018, from <http://it.people.com.cn/n1/2018/1214/c1009-30467708.html>
5. Böckmann, M. 2013. The Shared Economy: It is time to start caring about sharing; value creating factors in the shared economy. *University of Twente, Faculty of Management and Governance*.
6. Botsman, R., & Rogers, R. 2011. What's mine is yours: how collaborative consumption is changing the way we live.
7. Cannon, S., & Summers, L. H. 2014. How Uber and the sharing economy can win over regulators. *Harvard business review*, 13(10): 24-28.
8. Chambers, E., & Patrocínio, M. 2012. Business Models and Value Creation: A Case Study of New York City *Economic Development Corporation*.
9. Chen, F. Mobike and ofo's users and future. Retrieved December 12, 2018, from <http://tech.qq.com/a/20170228/019218.htm>
10. Danyang, J. 2013. Electronic commerce to the influence of the traditional business model. *Journal of electronic commerce*, 1: 15-16
11. Don, P. & Martha, R. 2014. Sharing economy: how to realize the win-win situation of shareholders, employees and customers in the Internet era (first edition). Zhejiang university press.
12. Dongyan, M. 2013. Thoughts on revenue confirmation of online group-buying enterprises -- based on the analysis of revenue confirmation of Groupon and nuomi. *Accounting communications*, 9.
13. Haijian, L. & Feng, L. 2004. Source of enterprise value and its theoretical research. *China industrial economy*, 3: 52-60.
14. Hernández, B., Jiménez, J., & José Martín, M. 2011. Age, gender and income: do they really moderate online shopping behavior? *Online information review*, 35(1): 113-133.
15. Hongyan, C. 2013. Optimization of logistics enterprise development strategy based on SWOT analysis -- a case study of Zibo city. *Enterprise economics*, 3: 164-167.
16. iiMedia consulting. China's bike-sharing industry monitoring report for the first half of 2018. Retrieved December 14, 2018, from <http://www.iimedia.cn/61658.html>
17. Jingyu, Y. 2015. Reflections on Uber enlightening and leading the development of global sharing economy. *Market modernization*, 19:13-17
18. Kauffman, R. J., & Wang, B. 2001. New buyers' arrival under dynamic pricing market microstructure: The case of group-buying discounts on the Internet. *Journal of Management Information Systems*, 18(2): 157-188.
19. Kim, D. & Benbasat, I. 2009. Trust-assuring arguments in B2C e-commerce: impact of content, source, and price on trust. *Journal of Management Information Systems*, 26(3): 175-206.
20. Mason, K., & Spring, M. 2011. The sites and practices of business models. *Industrial Marketing Management*, 40(6): 1032-1041.
21. Morey, M., Gottesman, A., Baker, E., & Godridge, B. 2009. Does better corporate governance result in higher valuations in emerging markets? Another examination using a new data set. *Journal of Banking & Finance*, 33(2): 254-262.

22. Nov, O., Naaman, M., & Ye, C. 2010. Analysis of participation in an online photo - sharing community: A multidimensional perspective. *Journal of the American Society for Information Science and Technology*, 61(3): 555-566.
23. Ofo. Retrieved December 12, 2018, from <http://www.ofo.so/#/>
24. Puschmann, T. & Alt, R. 2016. Sharing economy. *Business & Information Systems Engineering*, 58(1): 93-99.
25. Qian, W. Ofo has been sued for defaulting on its \$68 million loan to Shanghai Fenghuang. Retrieved December 12, 2018, from <http://finance.people.com.cn/n1/2018/0901/c1004-30265181.html>
26. Spira, L. F., & Page, M. 2010. Regulation by disclosure: the case of internal control. *Journal of Management & Governance*, 14(4): 409-433.
27. Stokes, K., Clarence, E., Anderson, L., & Rinne, A. 2014. *Making sense of the UK collaborative economy*. London: Nesta.
28. Swirsky, S., & Islam, M. M. 2011. An empirical investigation of the link between market share and valuation of earnings and growth opportunities. *American Journal of Finance and Accounting*, 2(3): 241-261.
29. Tianbo, T. & Xiaojun, W. 2015. Sharing economy: "the subversive economic model under the Internet. *Scientific development*, 12:78-84.
30. Xianchun, L. & Chenzhen, Z. 2011. Strategic analysis of consumer psychology in the B2C mode of e-commerce. *Mall modernization*, 6: 79-80.
31. Xiaofei, N. 2011. 020 mode drive 7 billion market thousand regiment war or change thousand zero war. *Communications information*, 12.
32. Xiaoming, S. 2012. Domestic mobile phone layout e-commerce channels online and offline to achieve comprehensive transformation. *Communications information daily*, 09.
33. Xin, Z. The number of active bike-sharing users fell from 125m to 93m. Retrieved December 12, 2018, from <https://t.cj.sina.com.cn/articles/view/1644948230/620beb0602000coq9?from=tech>
34. Yanqing, Z. 2012. Online and offline integration of traditional retail enterprises must overcome three barriers. *Communications information daily*, 02.
35. Zhaoli, W. 2016. Operation and management of private taxi and taxi market under the sharing economy model -- a case study of taxi market in Tianjin. *Enterprise reform and management*, 5: 47-47.
36. Zhilai, Z. 2016. Research on sharing economy and new business model from the perspective of supply side. *Exploration of economic issues*, 6: 15-20.
37. Zo, H., & Ramamurthy, K. 2009. Consumer selection of e-commerce websites in a B2C environment: a discrete decision choice model. *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans*, 39(4): 819-839.

Appendix:

Shared travel demand continues to expand, industry development continues to innovate

Since 2010, shared travel began, Yidao Travel, Didi Travel and other companies have received huge financing. After more than two years of development, the market entered a fierce competition stage, with the group enter the Chinese market, Uber came, the subsidies war became more and more fierce. There are many deaths in small and medium-sized platforms. The head enterprises began to seek a win-win situation. In February 2015, Didi Travel and Kuaidi Travel announced the merger. In 2016, the sharing bicycle boom came, causing capital chasing, and shared cars also entered the user's sight and shared. The demand for shared travel continues to expand, and industry development continues to innovate.

Starting stage (2010-2012)

Mobile Internet travel services based on LBS technology began to appear, companies like Yidao Travel Co. and Didi Travel Co. have sprung up, and they have received huge financing and captured the market.

Intense competition (2013-2014)

As the group entered, Uber entered China and joined the melee. The subsidy war became more and more fierce. There were many deaths in the small and medium-sized platforms, Didi Travel Co. and Kuaidi Travel Co. was in difficult situation.

Merging phase (2015-2016)

In February 2015, Didi Travel Co. and Kuaidi Travel Co. announced the merger, ending the subsidy war and starting to seek a win-win situation.

In August 2016, Didi Travel Co. to acquire Uber China Co., and its monopoly situation was formed.

Demand expansion (2016-2018)

More travel demand for subdivisions has been tapped, and shared bicycle companies such as Mobike and ofo have begun to exert their strength, quickly attracting a large number of users and huge

financing; sharing cars have also begun to actively deploy and become a force that cannot be underestimated in the sharing market.

Future? (2018-)

Traveling as an indispensable activity in people's daily life will inevitably require various ways to support. In the future, sharing skateboards, sharing private jets, and sharing yachts may develop.

共享出行需求不断延展，行业发展持续创新

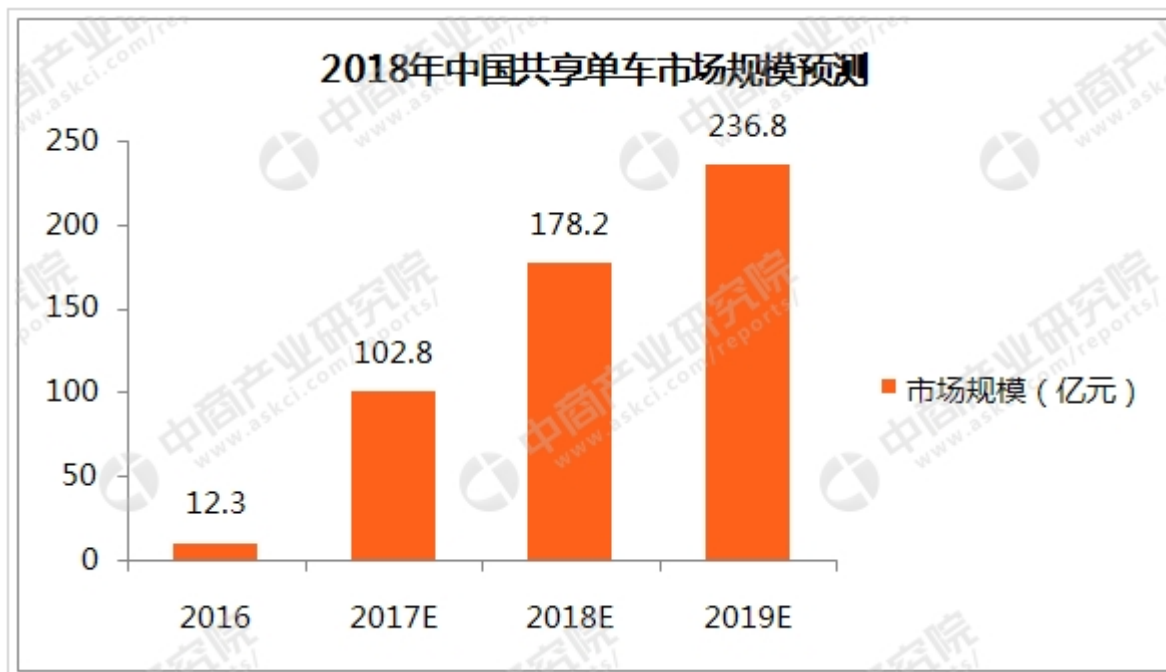
2010共享出行开始起步，易到用车和滴滴打车等企业纷纷获得巨额融资，经过两年多的发展，市场进入激烈竞争阶段，群雄并起，Uber进入中国市场，补贴大战愈演愈烈，中小平台多有死亡，头部企业开始谋求共赢，2015年2月滴滴打车和快的打车宣布合并等。2016年共享单车热潮来临，引起资本追逐，共享汽车也进入用户视线，共享出行需求不断延展，行业发展持续创新。



Source: TalkingData-2017 shared travel continued to prosper, just need or bubble?

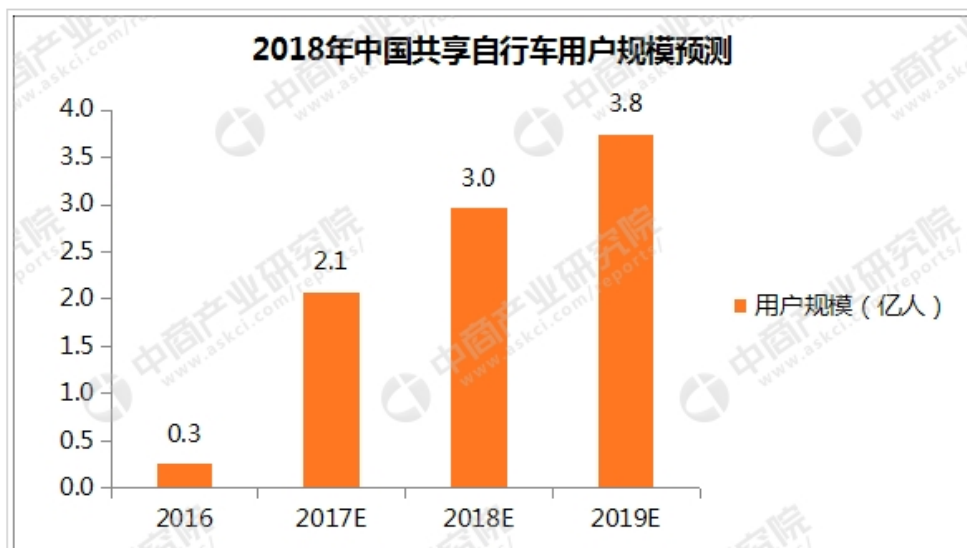
Huge market

According to the "2018-2023 shared bicycle industry market prospects and investment and financing strategy research report" issued by the China Business Research Institute, the domestic shared bicycle market will reach 10.28 billion RMB in 2017, a growth rate of 736%. By 2018, the domestic shared bicycle market will exceed 17 billion RMB.



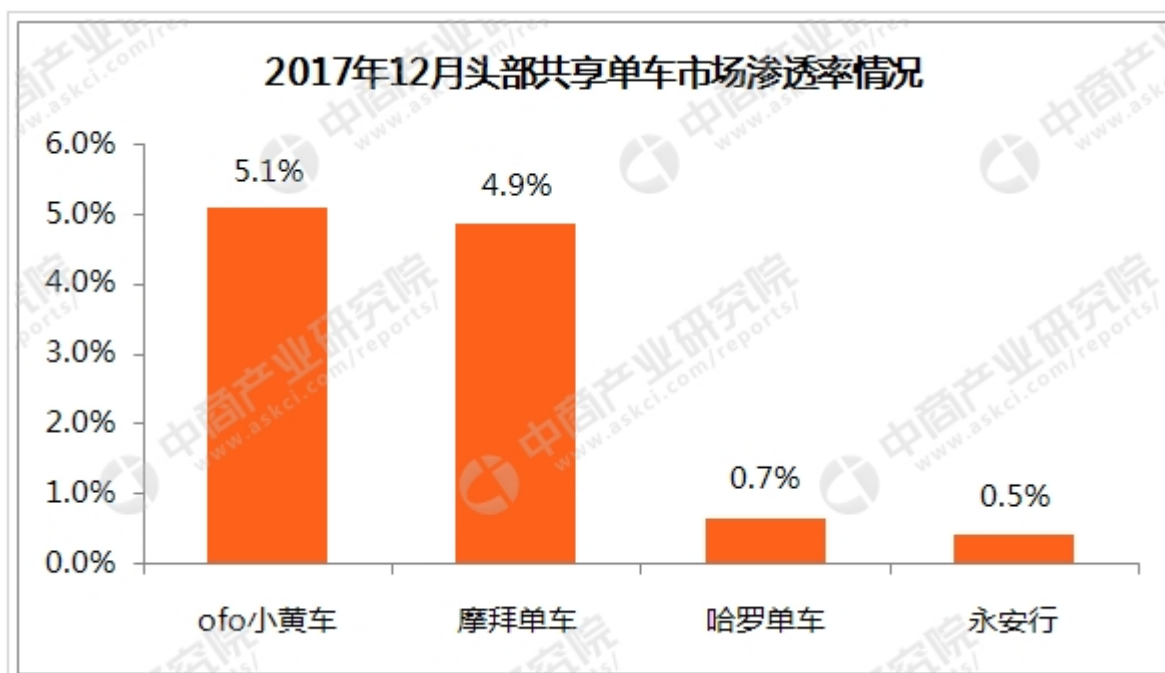
Exploding user size

In terms of user scale, it is estimated that the number of domestic shared bicycle users will reach 210 million in 2017, with a growth rate of 646%. By 2018, the number of domestic shared bicycle users is expected to reach 298 million.



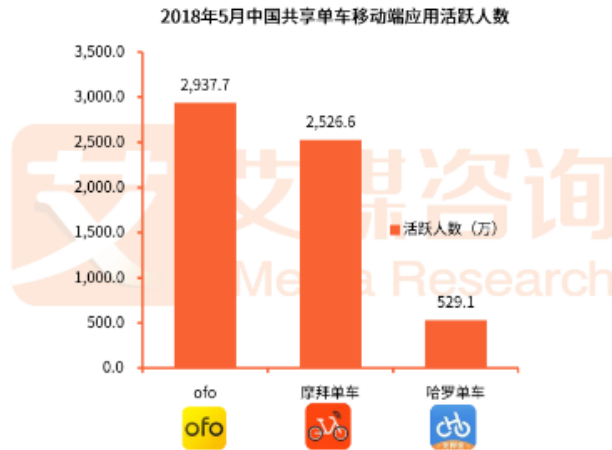
Polarized market

According to statistics, as of December 2017, the market penetration rate of ofo in December was 5.1%; the market penetration rate of Mobike was 4.9%.



According to iiMedia Research data, up to May, 2018, the ofo mobile app ranked first with 29.273 million active users, followed by Mobike cycling with 25.26 million, and the third HelloBike was 5.291 million, which is still a certain gap compared with the two shared bicycle brands.

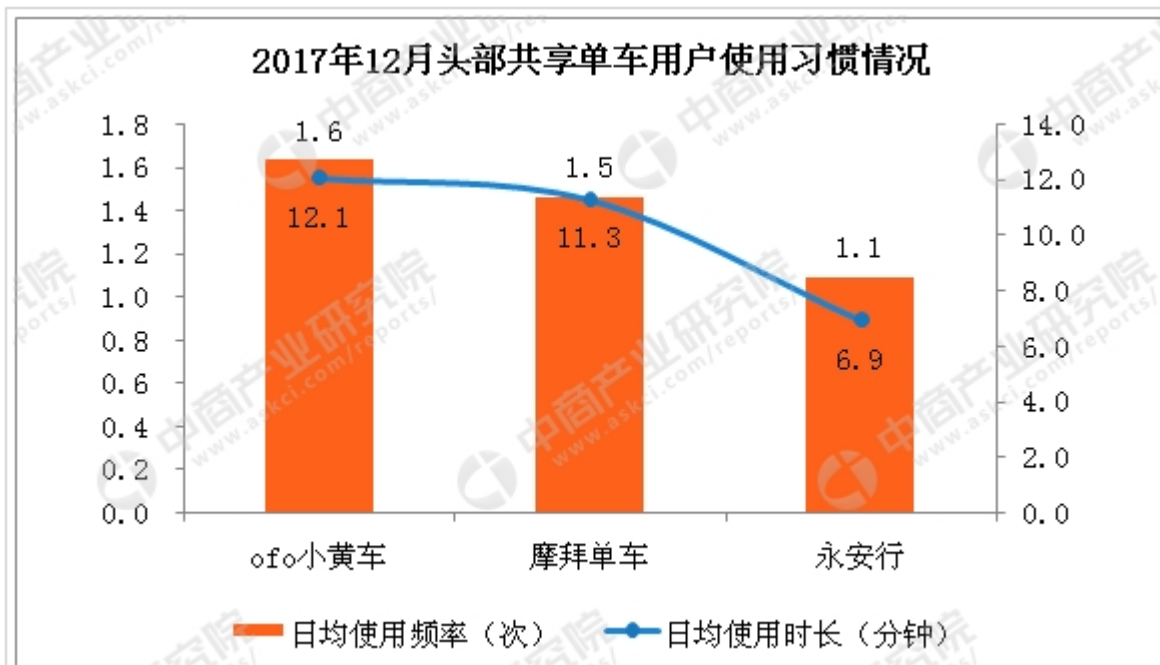
共享单车ofo摩拜两强格局稳定



数据来源：艾媒北极星（艾媒北极星：截至2017年12月底，北极星采用自主研发技术实现独立装机用户监测，系统已覆盖用户8.09亿。）

Shared bicycle user habits

According to China Business Research Institute, in December 2017, the daily usage of ofo shared bike in the active users was 1.6 times, and the daily usage time of the users was 12.1 minutes.



Sensitivity analysis model

	Normal codition	Reduced usage time	Deposit-free mode	Under Deposit-free mode and Reduced usage time
Deposit	199	199		
Users (million)	28.051	28.051		
Annual interest rate	5%	0.05		
Deposit return rate	40%	0.4		
Interest income from deposits	167.46447	167.46447		
Daily service time per bike (hours)	6	2	6	2
Bike delivery quantity (million)	10	10	10	10
Rate of coverage	50.89%	50.89%	50.89%	50.89%
of charging standards	1	1	1	1
Days of charge	300	300	300	200
Rental income	9160.2	3053.4	9160.2	2035.6
Revenue from other operations				
Total Income (CNY) (million)	9327.66447	3220.86447	9160.2	2035.6
Total Income (USD) (million)				
Exchange rate:6.75:1	US\$1,381.88	US\$477.17	US\$1,357.07	US\$301.57
of per bike purchase cost	350	350	350	350
residual value of per bike	50	50	50	50
Estimated useful life	3	3	3	3
Annual depreciation per bike	100	100	100	100
Total depreciation	1000	1000	1000	1000
Operation labor cost (The proportion of opera	1800	1800	1800	1800
Damage and lost rate	25%	25%	25%	25%
Damage and lost cost	875	875	875	875
Maintenance cost (5% of the purchase cost per	175	175	175	175
Total expenses (CNY)	3850	3850	3850	3850
Total expenses (USD) (million)				
Exchange rate:6.75:1	\$570.37	\$570.37	\$570.37	\$570.37
EBIT (CNY)	5477.66447	-629.13553	5310.2	-1814.4
EBIT (USD) (million)				
Exchange rate:6.75:1	US\$811.51	-US\$93.21	US\$786.70	-US\$268.80